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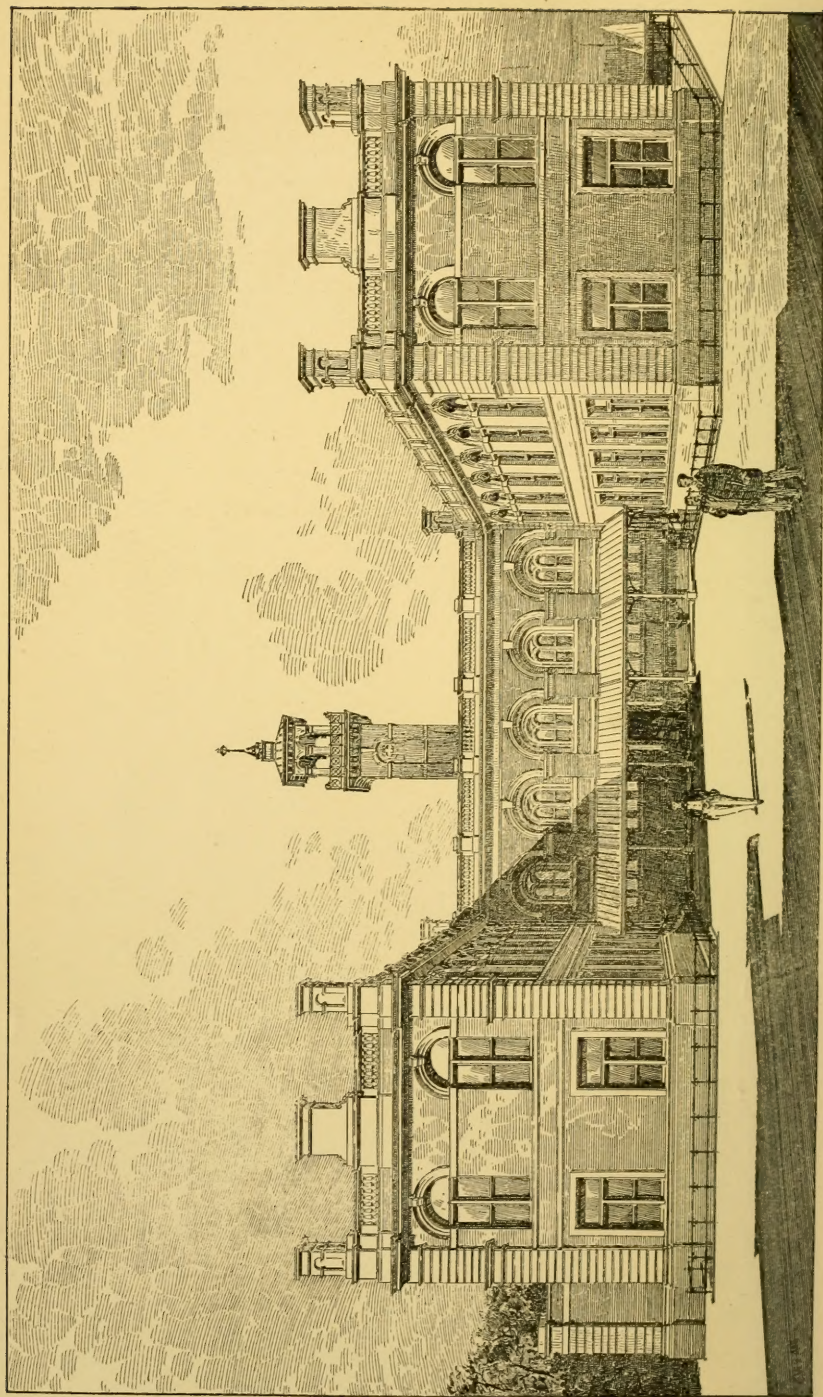




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MEDICAL SCHOOL, WITH RECENT ADDITIONS, NORTH VIEW.

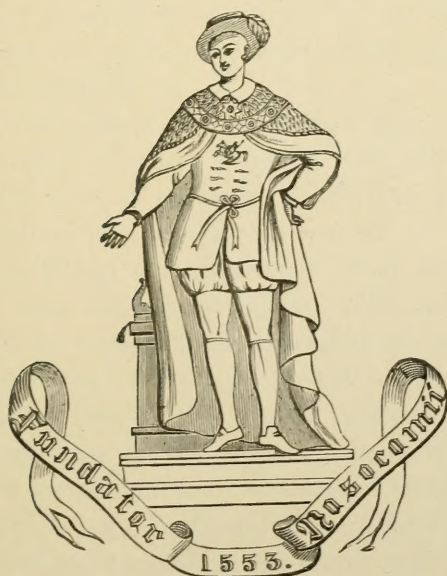


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*New Series.*

EDITED BY

DR. T. D. ACLAND AND MR. BERNARD PITTS.



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## PREFACE.

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THE present volume would not be complete without some allusion to the very considerable alterations which are in progress in the school buildings.

The recent extension of the medical curriculum to five years, and the growing wants of the School, have made it necessary to provide increased accommodation for the teaching of special subjects.

To meet this demand new buildings were projected in 1892, the erection of which has only been delayed by the inevitable difficulties of providing a sufficient sum to carry out the alterations in a satisfactory manner.

The new buildings, the elevation of which is given as the frontispiece, were commenced in May, 1893, and it is hoped that they will be completed by the end of the present year.

The Treasurer and Governors, though unable to erect the buildings at the cost of the hospital, entered warmly into the scheme and gave all the assistance in their power, and they obtained permission from the Court of Chancery to lend a sum of £16,000 to the Hospital and School Staff. The medical officers and teachers in their turn made themselves collectively and individually responsible for the payment of the interest on this sum and the repayment of the capital by the formation of a sinking fund extending over a period of thirty years.

The scheme has therefore entailed considerable self-sacrifice on the part of the Staff, but it is hoped that the School

may reap the advantage which will be afforded by the increased facilities for teaching and research.

It will be seen by reference to the ground plan that the additions which are to be made, include extensions of the Physiological and Pathological Departments and of the Students' Club, with alterations and improvements in the Chemical Laboratories, &c.

*Physiological Department.*—It is remarkable that so short a time as twenty-five years ago it should not have been thought necessary to include a definite Physiological Department in the plan of a medical school, yet at the opening of the new School in 1871 it was found necessary to convert a series of rooms constructed for the purposes of Pathological Chemistry into a Physiological Laboratory. The room thus obtained has done good service in the past, not only being used for the purposes of Physiological Teaching but also for the Classes of Biology and Pathology since instituted. The growth of teaching in Physiology has, however, long since made this combined arrangement inconvenient, since it has been found impracticable to give adequate locker and table space to several classes in the same laboratory, and the teachers were put to much inconvenience by the want of separate lecture rooms. These difficulties have now been overcome by the provision of new premises for the Pathological and Biological Classes, and the extension of the present laboratory by including the small yard heretofore existing between it and the Demonstrator's rooms. This extension has provided a lecture dais, backed by the class-rooms and flanked by a small room fitted up for Micro-photography, and capable of being darkened for the purpose of lantern demonstrations. A new engine-house, outside the walls of the main building, has also been built for the gas engine which works the apparatus for practical classes, and the crank has been extended so as to allow of the use of the power on the lecturer's table. The department has thus been rendered



complete in itself and thoroughly convenient. The expense of these alterations has been borne by the School Funds in addition to the £16,000 which is to be expended on the new buildings.

*Pathological Department.*—This department now consists of the Museum, Curator's Rooms, Bacteriological Laboratory, Cast Room and Post-mortem Room, and is complete in itself.

A large Laboratory is being provided in the new west wing.

The room is lighted on three sides, is 51 ft. by 29½ ft. in size, and connected with it is a small private room for the use of the teachers.

On the ground-floor of the same wing are rooms of similar dimensions, which will for the present be used as Class-rooms for various subjects. A part will be specially paved so as to be used for the Operative Surgery Classes.

*Biology.*—At present the class will be held in the new Pathological Laboratory, but if further accommodation should be needed in the future, the Class-room just alluded to will be well adapted for the purpose.

*Chemistry and Physics.*—Considerable alterations and improvements were made in the fitting and arrangement of the Laboratory last year, and it is proposed to bring the Collection of Physical Apparatus down from the room on the first floor, which it now occupies, to the Materia Medica Museum, so as to place the whole department *en suite*. This will allow of the present first floor room being converted into a Reading or Class-room in connection with the existing Library.

*Students' Club.*—It has long been felt that the present basement accommodation for this Club was unsatisfactory, and to bring this thoroughly up to the standard of the School it has been decided to erect a second wing to the east of the present front, which will contain a large Dining Room, a Smoking and Reading Room, a Kitchen and Offices. This

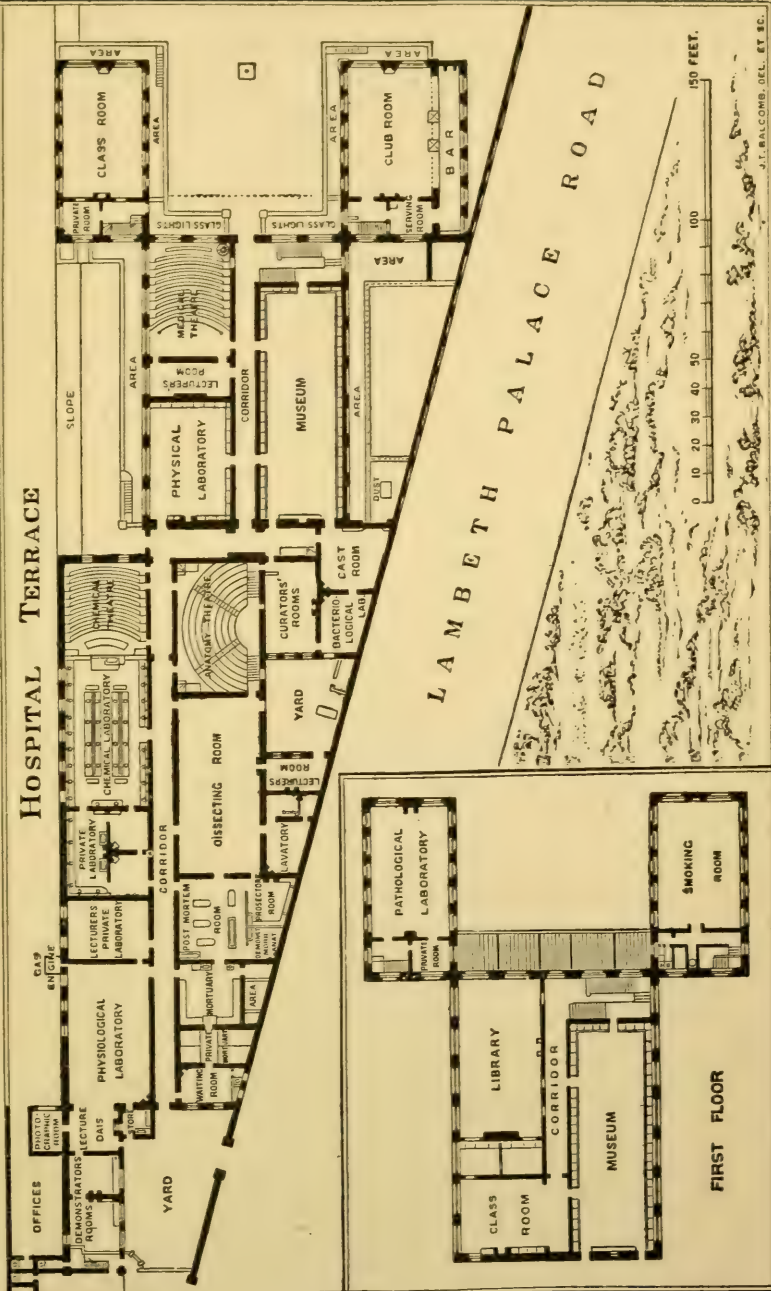
will entirely remove the cooking from the present main buildings, while the sitting rooms will be commodious, airy, and convenient.

The School authorities trust that these various alterations will place the building in a position second to none of the Metropolitan Schools. A reference to the frontispiece will show the alterations in the appearance of the original building, and it is hoped that all old St. Thomas's men will take the opportunity of coming to inspect the changes when complete.

The buildings are to be completed by Christmas, 1893.

# RIVER THAMES

## HOSPITAL TERRACE







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## In Memoriam.

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F. LE GROS CLARK, F.R.C.S., F.R.S.

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*"Non omnis moriar, multa pars mei.  
Vitabit Libitinam."*

THERE has passed away from our midst one who will certainly not die in the memory of his old pupils and friends; one who, more than any other teacher of our time, has attached himself to our school; one whose monument has essentially been raised in the affectionate memory of students, and whose influence will not pass away with him.

As one who has been closely connected with him as pupil, colleague, and friend, I feel it indeed an honour to have been asked to contribute some short account of him, his life, his work, his influence and character. But I recognise the difficulty of my task, for mine has been no common loss.

### A STRIKING FACE AND FIGURE.

By the likeness of him given in the accompanying plate, friends will recognise him, it is to be hoped, as they have best known him. The photograph was taken by Bassano, of Old Bond Street, and represents him about the year 1887. Several likenesses, taken at other times, show very little change in the character of the face or figure. Even a sketch taken in 1847, representing him as a handsome man in the magnificent coat collar of the time, is unmistakeable, and a marble bust of about 1865 is severely characteristic, though not showing his more recent beard and moustache.

His high and intellectual forehead indicated an intensity

of feeling which he peculiarly possessed ; heavy eyebrows overhung his keen and deep-set eyes, making an impressive, dignified, kindly, yet severe countenance. The austerity of this sometimes rather overawed a candidate at examinations, but he was really very tender-hearted, and often acted as the examinee's best friend when he least thought it.

Few men possessed so commanding an appearance. Tall, spare, erect, and square shouldered, he possessed the frame of a classical athlete, and looked as if he could deliver well from the left shoulder, and from his earliest times was foremost in active outdoor exercises. Of these, riding, rowing, and boxing were, I believe, his favourite pastimes. Until a short time before his death he could be seen almost daily on horseback. He was fearless as a rider, but gentle with his steed, enjoying the meet of the hounds as much as the horse did itself. He was very fond of all domestic animals ; and it is not surprising that they were quick to discover it and become attached to him.

#### MUSCLES FOR USE AND STUDY.

A few who knew him intimately may perhaps remember that his muscular development was extraordinary—not from its massiveness, but from its clear definition, and this may in part account for his fondness of the study of muscular action. Separate processes and digitations of muscles could be brought into prominent relief by him at will, and he enjoyed studying the action of these. His most important paper, read before the Royal Society, “On the Actions of Muscles in Respiration,” was the furthest development of his study in this direction. Up to a very late period of his life he remained one of the most active men I have ever known. He would think nothing of vaulting a gate, or undertaking any manual labour fit only for a young man.

One of the most noticeable peculiarities in his aspect was the presence of a most strongly-developed “Arcus Senilis,” present from the earliest times that I knew him, and this with markedly rigid arteries on the temple and in the pulse, indicated a possible source of trouble in his vascular system. But this never became more pronounced than it was at first.



## SOME LANDMARKS IN A LONG LIFE.

He was one of a large family, the youngest of nine, and he outlived them all. If it be true that children of large families have made more mark in the world than those of small, perhaps the discipline necessary in large families, and the mutual help in after life, may help to account for this.

Born in Mincing Lane in 1811, the son of a resident city merchant—for in those days merchants resided in the city more than now—his earliest school-life of importance was at Iron Acton in Gloucestershire, where he was, with two of his brothers, under the vicar.

## A STRANGE REVISIT.

A very curious circumstance happened with regard to this in after-life. Just fifty years after being at school there, he went down with his friend Sir James Paget and stopped in the same place—in the same house where he had been at school. The place had not changed. Everything was so much in the same condition as when he last saw it that he was able to direct enquirers to find their way to certain parts of the woods and neighbourhood, and to some caves not generally known. An old monument in the church was that of a Knight Templar, and Mr. Le Gros Clark asked if the spurs to the figure had been found, for they were apparently missing from the monument. He said that as a boy he had thrown them up on the top of the stone canopy. The verger, by means of a ladder, found them there amongst piles of dust and rubbish. Folks here were not very enterprising and church cleaning not too thorough. He was almost startled at finding the parish clerk as unchanged as the place itself—apparently the same old white-headed man as he had known. Truth to tell, he was the son of the parish clerk of fifty years before. Some of the very old folk came out to greet “Master Clark” and renew old times. Truly Iron Acton must be somewhat antique, and suitable for a visit from Rip Van Winkle. It would be interesting to compare the experience of anyone else as to

revisiting the scenes of their boyhood and finding all unchanged after fifty years.

#### CLIMBING THE PROFESSIONAL LADDER.

He entered as a student at St. Thomas's Hospital in 1827, two years after the separation of the Borough hospitals. Those were the days of hospital apprenticeships—almost a necessary condition for ultimate promotion on the staff. Mr. Travers, the Senior Surgeon, was an old friend of his father's, and he was apprenticed to him, though at one time there was a question about his being apprenticed to Mr. (afterwards Sir Benjamin) Brodie. Le Gros Clark's admiration for his old master, Travers, as a surgeon and a philosophical writer remained unabated to the end. He seems to have been a successful student, for he obtained the Cheselden Medal in 1830, and was appointed Assistant Demonstrator of Anatomy in the same year. Promotion, however, was slow in those days, for it was not until nine years afterwards (1839) that he became Lecturer on Anatomy and Physiology combined. A curious custom existed at that time, for before his certificate as Lecturer was recognised by the College, he was required to appear before the Council and to deliver two lectures before them—one on Anatomy and Physiology and the other on Surgery, the subjects being given with two hours for preparation. This rule soon became obsolete.

It was not till 1843, or thirteen years from the time of his becoming Demonstrator, that he was appointed Assistant Surgeon on Mr. Tyrrell's sudden death. After becoming Demonstrator, he used to spend part of his summer session abroad in the medical schools, and in this way visited Paris, Berlin, Göttingen and Edinburgh; previous to this he had attended the Anatomical School in Dublin, where he resided with Harrison, a genial man, the well-known author of a 'Treatise on the Anatomy of the Arteries.'

At Paris, Roux was the great attraction, and Le Gros Clark retained a great admiration for him during the rest of his life.

Germany, in those days, was not so attractive as now for students. But Graefe, Dieffenbach, and the elder Langen-

beck were some of the great stars. Müller of Berlin was another, and Dupuytren in Paris was as attractive as a great bear could be. Yet Le Gros Clark was an admirer of his work, and afterwards translated one of his books for the Sydenham Society.

After serving as Assistant Surgeon ten years he became full Surgeon in 1853, and retained this office for twenty years. Increasing engagements induced him to resign the Chair of Anatomy in 1854, but he retained the lectures on Regional and Surgical Anatomy, while Mr. Rainey was appointed to lecture on Descriptive Anatomy. When Mr. South resigned the Chair of Surgery, Mr. Le Gros Clark succeeded him, and retained this office until he retired from the hospital in 1873.

In 1864 he was elected a member of the Council of the College of Surgeons and served on the different committees. He was Hunterian Professor of Surgery and Pathology for the years 1867 and 1868 when the lectures he then delivered were upon "Surgical Diagnosis, especially in reference to Visceral Lesions."

In 1872 he was appointed Vice-President, and in 1874 President of the Royal College of Surgeons, giving the Hunterian Oration in 1875, whilst President, on February 13th, the 48th anniversary of his apprenticeship to the College. This Oration was philosophical and full of thought, and was referred to in the recent important Oration by Mr. Bryant on Hunter's Centenary.

After acting as Examiner in Surgery at the College of Physicians for two years and the University of London for five years, he was appointed a member of the Court of Examiners of the College of Surgeons in 1870, and re-appointed in 1875. He retired at the expiration of the ten years, and during the first half of this, examined in anatomy and physiology, as well as in surgery; but the subjects were separated in 1875, and he then only examined in surgery.

In 1872 he was elected a Fellow of the Royal Society, a distinction of which he remained justly proud all his life, and of which he recognised fully the responsibility. He contributed a paper to the 'Transactions' on "The Mechanism

of Respiration," a paper well worth careful study, as it goes into the use of muscles not previously credited with the action he ascribes to them. This paper is reprinted in his collection of 'Miscellaneous Essays,' which appeared in the year 1890, two years before his death.

For some years he was Surgeon to the Magdalen Hospital and to the London Female Penitentiary. He was also Consulting Surgeon to the Surrey County Hospital and to the Great Northern Hospital. But an appointment which threw him more into contact with the leading surgical and medical workers of the day was that of Surgical Secretary to the Medico-Chirurgical Society, where Dr. Cursham and Dr. Baly were successively his medical colleagues.

#### CHANGES OF RESIDENCE.

In his early days Spring Gardens formed an important centre for surgical celebrities, and he at first resided here, near to Bransby Cooper and Mr. Partridge. Bransby Cooper was specially kind to him, and told him many tales of his uncle, Sir Astley Cooper; but he was a rough and uncultivated, though genial man, and did not impress Le Gros Clark as a scientific surgeon. It was the wish of the authorities at the Hospital that Mr. Clark should have rooms nearer St. Thomas's, and he moved to St. Thomas's Street, and had his country house at Lee. In 1871, however, he purchased a property near Sevenoaks, and many old and present students will be able to recall him in his country house there, surrounded by beautiful scenery and the comforts of a charming home. Here he lived and here he died, holding still his office of Consulting Surgeon to the South-Eastern line, which ran close to his house, and being called in frequently to the Cottage Hospital for his opinion as Consulting Surgeon. He was also, naturally, much consulted on surgical cases by local practitioners, and was always ready to give his advice to the poor. He was able from Sevenoaks to pay frequent visits to his old Hospital and to Salters' Hall, where he was twice Master at twenty years' interval, and an active member of the governing body.

As a Governor of St. Thomas's and Consulting Surgeon, he took an active interest in the progress of the School.



Many and long talks have we had over the changes and improvements in the working of the old School, and nothing that has happened in the course of the last twenty years has occurred without his watching it with keen interest, and very often helping in some form or other. For he was at one time a member of the House Committee, and always took an active interest in the progress of the School and Hospital. Even present students will recognise this in the frequency with which he came down to their meetings to deliver some address to the Physical Society, or to take the chair at the Religious Society, or to attend some of their conversaziones and concerts.

### THREE INTRODUCTORY ADDRESSES AT ST. THOMAS'S.

He delivered the Introductory Address at the old Hospital in 1852, and had the honour of giving the first at the present Hospital in 1871, as has been graphically told by Dr. Leeson, in the '*St. Thomas's Hospital Gazette*.' Again, for the third and last time, in 1883, he gave the Address to an attentive audience of old and new students. We think no one else has done this three times. He was always present at the distribution of prizes and the old students' dinners, as many will remember, and perhaps all the more from most old students seeing him at one of these for the last time.

Of course, it was over the men of past times, some of whom have already retired from the Staff, and others who have become grey in professional work or public service, that his influence was most felt. The present generation is differently placed. "The old order changeth, giving place to new." Nothing can show the truth of this more than the introductory chapter he put in with his miscellaneous papers. Another paper he also wrote on "Sixty Years Ago," will be found in the first number of the '*St. Thomas's Hospital Gazette*,' and is full of interest.

### A BRIDGE BETWEEN THE OLD AND THE NEW.

Heroes of our profession of recent times, and extending into the past, were his personal friends and intimates. Of the older times I have already mentioned some, but he was

always pleased to talk of others like Sir John Forbes, Joseph Henry Green, Bowman, James Dixon the ophthalmic surgeon, still living, we are glad to say; and of his colleagues at the College he saw more of and enjoyed the society of particularly John Marshall, Busk, Luther Holden, and Sir William Savory, while of his hospital colleagues perhaps the most intimate have been Sir Risdon Bennett, Dr. Bristowe, Professor Stewart, and Mr. Denison, Dr. Clapton, and his old pupil Wale Hicks, now Bishop of Blomfontein.

#### HIS LAST ILLNESS.

In October, 1890, he was a good deal occupied with meetings, and writing and reading particular papers, and after a late evening in London, felt he had got a chill. This prostrated him, but he threw off the effects to a great extent, though not entirely. Then on November 27th came the wonderful wave of arctic weather, and it seemed to "get into his bones." He was now laid up with localised pleurisy and bronchitis, and being naturally a restive and easily-depressed patient, gave great anxiety to those around him. However, he improved, and insisted on going to Worthing, from which place he came back rather the worse for the visit. His old friends, Sir Risdon Bennett, Dr. Bristowe, and Dr. Clapton, came down and examined him at various times in the summer of 1891, and could find no organic disease. Influenza and its consequences did their work, though he was loth to confess it. But the works were wearing out. In the spring of 1892 he suffered acutely from renal colic, and was carefully attended by Dr. Blomfield, with occasional consultations with Dr. Ord, his old friend and pupil. But he became weaker and weaker, and passed away on July 19th, 1892, after a short last illness. He was buried at Riverhead, where he had attended the church for the last twenty years or more.

#### A PROFESSIONAL STUDY OF A HOSPITAL SURGEON AND TEACHER.

Considering him now as a hospital surgeon, it would be difficult to find anyone who would rank higher in modern days. His opinion was always highly estimated, and I have

known him right where others of equal standing were wrong. He prided himself justly upon his "tactus eruditus," and could distinguish deep fluctuation when others failed. His judgment also was that of a calm, scientific mind, leaning rather to what was within proof and certainty, not being swayed by the opinions of others, though he was always attentive to their criticisms.

One who has been associated with him intimately has written of him as follows ('Lancet,' October 22nd, 1892): "He was not only a distinguished surgeon, but a very wise and safe one. His sympathies were always with the higher and nobler aims, and he strove to raise the thought and tone of his profession. To regard surgery as a mere art he believed to be a very inadequate expression. Scientific surgery was his aim, and his thought and work were ever in this direction; he was singularly conscientious." But it would almost make those who really knew him smile to be told he was "wanting in decision, and was apt to hesitate and qualify," and that this was the weak point of his character. He was really considerate to the opinions of others, and listened to what men of much smaller experience might have to say, but his own opinion was formed and acted upon without hesitation.

It has been urged by some that he cannot be looked upon as a successful man. But surely this must depend upon our definition of success. It is not claimed for him that he had a large consulting practice, nor that he was run after as a surgical star, but he gained the highest possible position in the profession, was always looked up to as one of the most eminent men of his day, and never stooped to court popularity, but yet was universally popular when once well known. His opinion, was a thoroughly sound and wise one, and he was a truly conscientious man.

"He most lives

Who thinks most, feels the noblest, acts the best."

As an operator he was careful, deliberate, and not wanting in boldness. It must be looked upon as an axiom that a good surgeon must be a good mechanic, as well as a good physician; and Mr. Clark's great taste for mechanics was supplemented by a keen appreciation of the importance

of medical knowledge. Patients did remarkably well in his hands, for he was extremely attentive to matters of detail, without interfering unnecessarily with Nature's own work. One of his favourite maxims was "Avoid meddlesome surgery."

As a teacher he was careful and thorough in all his lectures, and students never presumed or were inattentive, for they stood in too much awe of him, and knew that what he was teaching them was sound.

Few men surpassed him in making an appropriate and polished speech: he was listened to with attention, and he never outstayed the welcome of his hearers. As a lecturer his language was always to the point, and he did not indulge in quotations from authorities, but spoke from his own large experience. What was a feature of his teaching as regards the treatment of surgical cases was that he laid great stress upon general principles. This, we feel, was a great advantage to students, as they were thereby led to think for themselves, and not blindly adopt a teacher's "ipse dixit." He was fond of putting in Latin epigrams, and it will be within the memory of many that this was noticed in a skit upon the staff of lecturers and teachers which some amusing and clever student scored against us. The list of the hospital staff and lecturers hanging up as a card in the different parts of the school and hospital was enlivened by having some one expression written out as a peculiar property of each individual. Against Mr. Clark was written "Cæteris paribus," "Pari passu." He was amused at this, but the skit was not so severe as that on some of his colleagues.

It was as a clinical teacher in the wards rather than as a lecturer that he will be remembered by old students. In his visits to the wards he was followed by an attentive class, who learnt something more than mere surgery. They learnt how to treat patients with kindness, thoroughness, and courtesy. Human nature was ever a study for him, and patients were not looked on as mere cases. The human element in them was never lost sight of, and many an indirect lesson was thus learnt.

From his large experience he was fond of discussing



points of practical importance in the surgical treatment of disease and injury; and perhaps some of the most interesting observations he made to those going round with him were on some of the more difficult points of surgery connected with lithotomy and hernia, but these and other points he has touched upon in his paper in the Hospital Reports.

As a consultant his manner was too severe to please the practitioner generally, but he gained the trust and affection of both patient and practitioner, and this once gained was never lost.

#### WRITING SHOULD COME AFTER EXPERIENCE ONLY.

As a writer he was polished, and somewhat inclined to follow the style of the old school. He was not terse and epigrammatic, as is the tendency of the present day, and he was fond of a little philosophical "touching up" of his subject. His 'Miscellaneous Papers' were published in the year 1890 for distribution amongst his friends, and these were of general interest. But besides these he had already published, in 1836, a work on 'The Anatomy and Physiology of the Nervous System;' but this did not attract much notice, although Marshall Hall's views were here first enunciated. Two volumes of Dupuytren's 'Leçons Orales' were issued by the Sydenham Society in 1847 and 1853, translated by him; 'Lectures on Surgical Diagnosis of Visceral Injuries' were published in 1870; 'Outlines of Surgery,' of which a second edition appeared in 1872; Paley's 'Natural Theology,' edited for the S.P.C.K. in 1875; a little manual of Physiology for the same Society in 1883. Several articles were contributed by him on Anatomy and Physiology in the 'Encyclopædia Metropolitana' about 1840; several papers in the 'Medico-Chirurgical Transactions,' critical articles in the 'British and Foreign Quarterly,' and a few contributions of cases to the medical papers. To the 'St. Thomas's Hospital Reports' he was a regular and valued contributor, and many of his papers now to be found in his collection of 'Miscellaneous Essays' have already appeared in these volumes or in the 'Journal of Anatomy and Physiology,' 'Transactions of the Royal Society,' or similar journals, where they could not easily be found.

But it was in his personal influence over those who came in contact with him rather than as a surgeon, consultant, or writer, that he will be remembered. It is, perhaps, the unexpressed ambition of most public men, and scientists in particular, to be able to feel that when they are gone their spirit may be able to say with Horace,

“Exegi monumentum ære perennius.”

To some it is permitted to leave their mark in some great work, literary or otherwise. Too often a great name is handed down to posterity attached to some absurd little mark or foramen, some unimportant instrument, or some little operation, or other triviality; and this applies particularly to anatomists and surgeons. There is an operation connected with Mr. Clark's name in some of the text-books, but it is certainly more in the influence for good which he has exerted over men that he will be remembered and his name revered.

#### A PERSONAL STUDY OF A BRAVE AND COURTEOUS GENTLEMAN.

In his habits and manner of life he was excessively simple. An early riser, an extremely temperate liver, fond of home life, yet ready to join in public functions which he enjoyed. In his dress he was always neat, and his commanding appearance made him always a prominent figure in any collection of men. In his courtliness of manner he recalled the pictures drawn of the gentleman of the old school, and there are those who have likened him to that masterpiece of Thackeray's, “Colonel Newcombe.” To my mind, however, there was more of the chivalrous character and commanding appearance of one of Sir Walter Scott's heroes, and this was his favourite type of character in reading. Scott was his favourite author, and in many respects he reminded one of the chivalrous, courtly, and rather fiery character of the gentlemen drawn not only by Scott but by authors of that period. He was a thoroughly courageous man, and it may be within the memory of some of the readers of this paper that when we were at London Bridge, and some exuberant and thoughtless students had

irritated the roughs outside by snowballing until no one dare show himself outside the gates, Le Gros Clark came down from the wards. The students ceased as he came by and doffed their hats to him. He ordered the porter to throw open the iron gate, and walked out among the crowd, knocking down the first man who tried to stop him. Thence he passed on unmolested on his way to London Bridge.

Another instance of his courage I personally recall, for he was bringing me a plaster cast of some surgical deformity, and came down from Waterloo Station by the back steps. At the bottom of these and at a bend in the narrow road came a runaway hansom cab without its driver. Le Gros Clark stepped into the road, his hands encumbered by my cast and an umbrella, and stopped the horse himself. The driver came running up shortly, and was so grateful to Le Gros Clark that he greatly wanted him to come back to the public-house where he had been refreshing when his horse took fright. This was an amusing feature of the incident, which Le Gros Clark then and afterwards laughed at, for not many would dare to offer him a "drink" at the public-house.

He was the soul of honour, and in any question of professional or other conduct in which honour was involved he was naturally referred to as an arbitrator. I know that in any case of doubt or difficulty others like myself would naturally appeal to him.

Attention to detail was one of his strong points in surgical and in other matters. This was carried to such an extent that his personal intervention sometimes prevented others from carrying out simple matters, and perhaps interfered with the development of independence of character in others.

There was in him a strong gouty tendency, which produced at times the most intense headache and nausea and consequent irritability. This was a great trial to him, and could always be seen in the anxious appearance of his countenance. But however irritable it caused him to be, there was in him such a strong sense of justice that he made ample amends afterwards to those whose feelings he might have tried by any sharp expression.

There are some elements of character found, I think, in most men who have attained eminence or success, and the absence of which certainly interferes with social progress. These were present in a very marked degree in Mr. Clark. Punctuality in appointments was the first of these. Promptness in answering letters and in attention to engagements or duties of any kind was the second of these characteristics. The third was perseverance or persistence in any work which he had undertaken. When he was engaged in any writing he carried about with him, in his pocket, slips of paper containing questions to be answered and points to be cleared. These papers I have a keen recollection of, as they often heralded most interesting discussions upon many knotty subjects; his persistence in working at a definite end to be gained, naturally resulted in his almost universally succeeding in his object.

#### SOME STRONG POINTS OF CHARACTER.

Order, Justice, Truth, and Purity were four of the cardinal virtues which were particularly marked in him. It is not to be wondered at that his tendencies politically were those of a steady and yet progressive Tory. His clear scientific mind balanced probabilities and arguments relating to events scientific, political and social; but he had a rooted objection to personally undertaking the daily recording of observations which characterise the statistical mind. I have never met with a clearer head for grasping general principles from a mass of details, and this was a peculiarly strong point of his scientific character, and made conversation with him on any subject interesting and valuable. Scientists of all kinds found in him a useful, trustworthy, and experienced critic.

Respect and obedience came naturally from those who revered him, and these were nearly all with whom he was brought in contact. And yet there was no personal work too great for him to do for a friend; no trouble too great for him to take to help them. Rich and poor in his neighbourhood speak of him as their greatest friend, for he entered at once into their difficulties, helped them by his



advice, and yet criticised any action which he thought should be found fault with. He was strong in his likes and in his dislikes, a warm friend, and an honourable opponent. He never hesitated to express his opinion freely, whether palatable or not, when the occasion required.

If one were asked what was the secret of his influence, which was certainly very wide-spread, I think that the keynote to it was "sympathy." Sympathy in distress and trials ; sympathy in success, when he was careful to give a warning note of possible dangers ; sympathy in happiness or sorrow, in work accomplished and work to be done. He entered into the feelings of younger men in their difficulties, for he had gone through probably the same in his long and large experience, and with older friends and those who appealed to him, he showed his strong religious feeling and trust in a merciful and Almighty Power. His wish to harmonise the truths of Christianity with the advances of science may be seen in his addresses to students and others upon this subject. But, as with others, his own life and character were perhaps the most important influence :

"Lives of great men all remind us  
We can make our lives sublime."

He was well read in general literature, had thought deeply, had observed carefully, and had had a specially large experience of life, both professionally and otherwise. He was fond of the study of philosophy, and his mind was a philosophical one. He had never travelled out of his own country much, and was fondest of a quiet, retired country holiday, with a view of the sea, which carried away his thoughts into futurity as he gazed at the distant horizon. Besides thoughtful philosophical reading, he was fond of the study of history where it included stirring times, like those of the Peninsular War. These were times he had almost seen, and the heroes of that period were household words to him as a boy. These boyish influences last long and often colour a life, and no wonder then that he liked to review these times. Nobility of character and purity of motive with fervent loyalty to our profession and its highest aims were characteristic of him, and these principles were impressed upon others by his example rather than by any



preaching. Our profession was meant to be a noble and an ennobling one.

### NOT LOST TO US.

In common with many others, but especially as perhaps his most intimate pupil, colleague, and friend, I feel that I have indeed lost a friend, and it is difficult to realise that he is gone. And I with satisfaction recall the frequent, almost daily intercourse with him, and one of his favourite quotations, that "Iron sharpeneth iron; so a man sharpeneth the countenance of his friend." But I feel that his influence still remains, both with others as well as with myself, and I close this incomplete notice by an apt quotation from the greatest of our English writers:—

" He did look far  
Into the service of the time, and was  
Discipled of the bravest ;

\*       \*       \*       \*       \*

Contempt nor bitterness  
Were in his pride or sharpness ; if they were,  
His equal had awaked them ; and his honour,  
Clock to itself, knew the true minute when  
Exception bid him speak, and at this time  
His tongue obeyed his hand ; who were below him  
He used as creatures of another place ;  
And bowed his eminent top to their low ranks,  
Making them proud of his humility ;  
In their poor praise he humbled. Such a man  
Might be a copy to these younger times."

W. W. W.

A CLINICAL STUDY  
OF  
INFANTILE HEMIPLEGIA WITH ACUTE  
ONSET.

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By W. B. HADDEN, M.D.

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I HAVE notes of forty odd cases of hemiplegia occurring in young children, the majority of which have been under my care at the Hospital for Sick Children. I have excluded from consideration in this paper those cases in which there was no definite onset, the nature of which I shall briefly allude to presently. I hope to deal with this group on another occasion.

Our knowledge of infantile hemiplegia is not sufficient to enable us to describe types according to an anatomical and pathological basis. I have had no experience which would warrant me attempting the task. The only differentiation which I shall make is based on clinical grounds, although I am inclined to think, after considering the scattered data of morbid anatomy, that the distinction is one of importance. I divide infantile hemiplegia into two groups, (*a*) those with an acute onset, and (*b*) those without definite onset. As regards the latter, I may say that most are probably congenital, and possibly dependent on mechanical conditions during pregnancy or delivery favouring intra-cranial hæmorrhage; others, of doubtful origin, may be in some cases

associated with sclerosis of the convolutions. It is clear that this class (*b*) ought really to be separated from class (*a*), in which there is usually sudden hemiplegia suggesting some vascular causation—such as embolism, thrombosis, or hæmorrhage. The distinction to which I call attention is obviously of importance, and although not overlooked by most authors, has nevertheless not been sufficiently accentuated. The clinical history of the two conditions must be kept apart. I am far from saying that the division is sufficient; indeed, I am quite sure that the class of infantile hemiplegia calls for finer analysis, but this will require more precise information regarding the initial morbid change than we now possess.

Some apology is required for bringing forward for analysis a number of cases which must be called few when compared with the material at the disposal of Osler,<sup>1</sup> Sachs and Peterson,<sup>2</sup> and others. I feel, too, the justice of an obvious criticism that I have no pathological material to offer. Perhaps I may say in excuse that my cases have been mainly observed in very early life, sometimes almost directly after the onset, and hence have a value not possessed by those investigated many years after the attack, in workhouses and infirmaries. The subject, moreover, is one which has long engaged my attention, and many of my observations have been made in the light of the numerous and valuable contributions published in recent years.

Of my 26 cases of infantile hemiplegia with acute onset, the ages ranged from eight months to nine years. The liability to the disease as regards age may, however, be stated better by noting that no less than 20 occurred at and under the age of three years, and of these 17 occurred at two years or under. The first three years of life is, indeed, accepted by all writers as the period of greatest liability.

The mode of attack presents in the great majority of cases a remarkable uniformity. The child is suddenly seized, often in the midst of apparent health, with convulsions, unilateral or general; and in a few hours, or it may be not

<sup>1</sup> 'The Cerebral Palsies of Young Children.'

<sup>2</sup> "A Study of Cerebral Palsies of Early Life, based upon an Analysis of 140 Cases," 'Journal of Nervous and Mental Disease,' May, 1890.

for days later, one side is found to be paralysed. The point of interest is the occurrence of hemiplegia at a period of life (usually under the age of three years) when the conditions favouring embolism, thrombosis, or hæmorrhage are not common. In my series of cases the heart was apparently normal in all, though of course the existence of thrombi in the cavities of the heart, or the presence of vegetations on the valves, must be allowed as possible. My opinion is that embolism is a rare cause of true infantile hemiplegia, and I base this partly on the fact that the heart is almost invariably free from disease so far as physical signs can determine the point; and partly, and perhaps mainly, on the rarity of organised thrombi in the cavities of the heart, or of the presence of vegetations on the valves in children under the age of three years.

I think it is not unlikely that the commonest cause of the affection will be eventually found in disease of the arterial walls from various morbid agencies, and that the resulting and immediate gross change may be either thrombosis or hæmorrhage.

Unfortunately we have little information respecting the initial changes in children under the age of three years.

Osler (pp. 43—45) has collected sixteen cases of acute hemiplegia in children, in seven of which there was plugging of the middle cerebral artery, usually embolic, and in nine of which there was hæmorrhage. But with one exception all these children were over the age of three years, and ten were over six years.

Such conditions as atrophy with sclerosis of the convolutions, cysts, simple and hæmorrhagic, and porencephalus, found years after the onset of acute hemiplegia, represent the results of acute vascular lesions, such as arterial obstruction and hæmorrhage. Very commonly, however, sclerosis is unassociated with these acute lesions, the accompanying symptoms being slow and progressive. Whether the alterations found within and around the small arteries in chronic disease are primary, as Jendrassik and Marie believe, or are consecutive to the change in the neuroglia, are still matters of dispute.

That cerebral sclerosis is sometimes of syphilitic origin



is highly probable, and hence the suggestion that the arterial change is primary is peculiarly interesting in relation to the question of the syphilitic origin of certain cases of acute infantile hemiplegia.

*Causation.*—There is no doubt that a certain proportion of cases follow so closely the acute specific diseases, that a causal connection may be reasonably assumed. Scarlet fever, measles, whooping-cough, diphtheria, and rarely mumps have been quoted as antecedent conditions; but allowing for these and other similar conditions, a large proportion of cases remains of which the causation is doubtful. I may add that I have never had reason to suspect the existence of renal disease. In my series, the infectious fevers only figured as a causative agent in two cases. In one instance the hemiplegia came on after convulsions in the decline of whooping-cough. When I saw the child more than three years later, there was clumsiness of the left hand with some general weakness of the arm. The leg was natural, but the knee-jerk brisker than on the right side.

*CASE 1. Hemiplegia after varicella.*—Three children of the family were attacked with varicella. Two weeks after the onset in the patient, a boy æt. 3 years, and when the pocks were drying up, there were convulsions, chiefly left-sided, lasting five hours. He was delirious next day, and five days later he was found to be paralysed on the left side.

When I saw him soon after the seizure the left arm was quite paralysed, and there was little power of movement of the leg. The left knee-jerk was exaggerated, but there was no clonus. The left side of the face was weak. He would not protrude the tongue, but it lay straight on the floor of the mouth. The child was dull, but understood what was said to him. He used to talk, but since the attack he had been practically speechless. From the mother's account I inferred that the child was probably left-handed. The paternal grandfather was also said to be left-handed. Heart normal.

*Syphilis.*—What share, if any, has congenital syphilis in the causation of infantile hemiplegia? In Osler's 120 cases one only could be ascribed to this cause, whereas Abercrombie mentions four at least, possibly six, out of a series of fifty cases.<sup>1</sup> It is possible that in Osler's cases, some of which were examined years after the attack, the conditions pointing to syphilis might not always be so readily deter-

<sup>1</sup> "Clinical Lecture on Hemiplegia in Children," 'British Medical Journal,' June 18th, 1887.



mined. Cases, though few in number, have been ascribed to syphilis by Gaudard, Jendrassik and Marie, and a few others.

Sachs and Peterson, however, have seen several cases, and they allude to one described by Seibert.

Henoch<sup>1</sup> is distinctly of opinion that inherited syphilis is rarely a cause of cerebral symptoms in children, and he throws doubt upon the syphilitic origin of some of the published cases of arterial disease in children.

Mr. Jonathan Hutchinson, in the discussion on visceral syphilis at the Pathological Society, states that "arterial disease in inherited syphilis is probably very rare."<sup>2</sup>

Marie, in an excellent article on "Infantile Spasmodic Hemiplegia," to which I am much indebted, quotes Fournier as believing that hemiplegia in the young child is rarely syphilitic, and Marie evidently favours this view.<sup>3</sup>

The balance of evidence would appear to be against inherited syphilis being a common cause of infantile hemiplegia. It must be remembered, however, that little attention has been directed to the condition of the vessels in inherited syphilis. Definite pathological evidence respecting arterial disease in inherited syphilis has been brought forward by Dr. Barlow and others in the 'Transactions of the Pathological Society,' vol. xxviii.<sup>4</sup>

I am far from satisfied that congenital syphilis is an unimportant agent in the production of infantile hemiplegia, although I must allow that my belief has a purely clinical basis. Considering that the majority of cases of infantile hemiplegia arise without apparent cause, considering too the known influence of syphilis in the production of arterial change in the adult, and occasionally, at least, in the child,

<sup>1</sup> 'Lectures on Children's Diseases,' translated by Dr. John Thomson, New Syd. Soc., vol. i, pp. 108—111.

<sup>2</sup> 'Trans. Path. Soc.,' vol. xxviii, p. 310.

<sup>3</sup> 'Dictionn. encyclop. de médecine.'

<sup>4</sup> "Meningitis, arteritis, and choroiditis in a child, the subject of congenital syphilis," by Dr. Barlow; "Gummata on cranial nerves; disease of cerebral arteries; cicatrices of liver and spleen in a case of congenital syphilis," by Dr. Barlow; "Drawings illustrative of syphilitic disease of the viscera," by Dr. Turner and Dr. Sutton; see also article by Dr. Barlow and Dr. Judson Bury in the 'Dictionary of Psychological Medicine,' vol. ii, p. 1259; also a paper by Chiari in the 'Wiener med. Wochenschr.,' Nos. 17 and 18, 1881.

I confess that my tendency is to look upon syphilis as a condition requiring the most careful investigation in these cases. I do not think that the inquiry has received the attention which it demands.

In three of my cases no special investigation was made on this point. In nine cases there was no reason to suspect syphilis.

It is worth while, perhaps, to give briefly the family and personal history of the following twelve cases. None of them, however, was actually known to be syphilitic from my personal examination, so the evidence must be taken with caution.

In five cases there was a bare suspicion; of these there was a history of miscarriages in the mother in three, in one there was some suspicion of previous disease of the nasal bones in the patient, and in one instance the first four children of the family had been born dead, and there had been one miscarriage.

In seven cases the evidence of congenital syphilis appeared to be stronger.

1. Mother married two years; one miscarriage before birth of patient; history of snuffles with a rash on the buttocks and inner surfaces of the thighs when the child was six months old.

2. History of thrush and snuffles in the patient and another child (the remaining child died at the age of six weeks in convulsions).

3. Patient had snuffles and rash when two months old; a miscarriage preceding patient's birth. Two other children, one died eight days after birth of doubtful cause (said to be born prematurely), the other died of whooping-cough when a month old.

4. History of thrush and a rash on the buttocks in patient. Thrush in seven other children—that is, in all the children except one.

5. Patient first child; thrush and rash on the buttocks when three months old (this child developed tubercular peritonitis later).

6. Thrush and rash on buttocks when a few weeks old.

7. Thrush and snuffles in patient and another child (see Case 4).

In two other cases, the histories of which I shall give, the presence of syphilis was undoubted.

It is interesting to note in Case 2 that the first fit, which no doubt was associated with coarse disease of the brain, occurred after the child had been taking mercury for three months. The pathological process, whatever it may have been, seemed to extend over a considerable period, for it was not until six months after the first convulsion that distinct hemiplegia was observed. During nearly all this time mercury in some form or iodide of potassium was being administered.

No doubt it will be urged that the case was not of syphilitic origin because mercury was of no avail. I do not think, however, that this argument invariably holds good. Most of us have seen undoubted cases of cerebral syphilis in the adult which have occurred in spite of careful treatment in the early periods of the disease, and some cases of cerebral syphilis do not yield to the use of mercury and iodide of potassium.

In this case the iritis and keratitis also did not disappear readily under treatment, and the ulceration of the palate was obstinate, although it finally underwent cicatrisation.

CASE 2.—Female, *æt.* 9 years, was brought to me in May, 1889. There were extensive ulceration and cicatrisation of the soft palate and uvula, nasal discharge, and caries of the nasal bones. There was no rash. No history of congenital syphilis was obtained in the three other children of the family, and the patient had not suffered from snuffles or rash when a baby. The mother had had one miscarriage, which occurred before the birth of the patient. I prescribed grey powder, and the child continued under anti-syphilitic treatment for more than three months. She then had a fit in which the face twitched, the mouth being drawn to the left; the tongue was bitten and consciousness lost. I saw her very shortly afterwards, and found that there was no paralysis and no optic neuritis.

A few days subsequently she had a few fits of the same kind.

On August 12th, 1889, she was seized with a fit in the train when she was being brought to the Hospital for Sick Children to pay her usual fortnightly visit to me. She was admitted and remained under observation five days, but no paralysis was detected. She was discharged because she had been heard to whoop. She attended as an out-patient every fortnight, and for seven weeks after leaving the hospital she had been free from fits, and although she still coughed, had not whooped or vomited. At the end of this time she was seized with convulsions in the out-patient room. The

right arm and both legs were affected, and she slept for nearly two hours afterwards. She was again admitted, and then it was found that there was some iritis and slight keratitis of the left eye. There was no hemiplegia, and the optic discs were normal. She was discharged in six days.

During the succeeding five months she attended as an out-patient, and continued to take mercury and iodide of potassium. There had been no fits. At the end of this time the mother found one day that there was paralysis on the left side, but no fit or loss of consciousness had been observed. She had, however, complained of pain in her head for some time previously. She was again admitted into the hospital. There was now no doubt that the intellect had been undergoing impairment for some months.

She had previously been intelligent and good-tempered, but had now lost her memory, had forgotten her schooling, had become incapable of learning anything, and in addition was irritable, emotional, garrulous, and silly. The condition of the iris was much as on the previous admission. The ulcers on the hard palate had healed, and there was much cicatrisation of the soft palate and uvula with two small ulcers on the former. She could walk, but the left leg was distinctly weak; during progression there was flexion at the elbow, wrist, and fingers on the left side. (This was possibly an associated movement. See Case 12.) She could use the left arm for many ordinary movements, but there was marked weakness. There was distinct paresis of the lower part of the face on the left side, and the tongue when protruded deviated slightly to the left.

The cutaneous reflexes were brisk and equal; both knee-jerks brisk, but that on left side exaggerated; no ankle or knee clonus. The optic discs were normal, and there was no paralysis of cranial nerves. Sensation was intact. The sphincters were not affected. Lastly, I may add that the urine never contained albumen, and that there was a bruit, evidently hæmic, over the pulmonary area.

CASE 3.—Male, æt. 10 years. He had snuffles when two weeks old and thrush at one month, but no rash. The mother had had no miscarriage. When he was a year and nine months old he was suddenly seized, when in apparent health, with complete paralysis of the arm, face, and leg on the right side, and the next day he began to have right-sided convulsions, which lasted two or three days. It is interesting to note that the improvement was very gradual, extending up to the age of nine.

His condition was as follows:—The right arm was somewhat smaller than the left, and there was some loss of power. The right hand was clumsy, and when he tried to pick up a pin the fingers sprawled over it, and at the same time there were associated movements of the left hand, as though he were trying to pick up an imaginary pin. The right half of the face showed some weakness; when he smiled the left side moved first, and he showed the teeth better on the left than on the right side. The nose had been pulled to the left. The tongue was protruded straight. The right leg, which was not wasted, was lifted rather high and dragged when he walked. The knee-



jerks were brisk and equal, but there was no clonus. The plantar reflexes were brisk and equal. He spoke well, but it was stated that he did not talk until he was two, but afterwards learnt rapidly.

The boy was intelligent, and had had no fits since the onset of the hemiplegia. He was, as might be expected, left-handed. The heart was normal. The sight was said to have been defective for a year, and Mr. Gunn, who examined him, reported that he had interstitial keratitis and extensive choroidal atrophy. The upper left central incisor was pegged, and convex anteriorly.

CASE 4. *Left hemiplegia; possible syphilis.*—Male, æt. 2 years and 4 months. The patient was the third child, and was born at term without difficulty. He and the eldest child had had thrush and snuffles, but no rash. The second child, who had not suffered in this way, died at the age of six weeks in convulsions. The patient had measles when a year old, but he recovered speedily. When fifteen months old he suddenly became unconscious without convulsions, and was soon found to be hemiplegic on the left side. He was seen by Dr. Penrose the day after the attack, and the following account is from his note-book:—"Wasting three weeks, vomiting, diarrhœa, offensive stools, ulceration about buttocks. Old scars of left forearm and of left ankle. Screams every hour. No vomiting now. Slow, irregular pulse. Râles over both lungs. Loud piercing scream. Head not retracted. Well-marked left facial paralysis. Conjugate deviation to the right; eyes cannot get past middle line on left side. Left side weaker than right. Right thigh stiff, flexed at hip, but can be straightened; immediately drawn up again. No neuritis. No albumen or sugar."

Four weeks later Dr. Penrose noted that there was still left facial paralysis, that the eyes could be moved to the left, that the left hand was useless, and that there was typical dragging of the left leg.

When I examined the child a year later there was marked paralysis of the lower part of the face on the left side, the left arm was stiff and useless, the fingers semiflexed with the thumb beneath, and the radial tap on the left side brisk, but absent on the right side. When he walked the left leg dragged and turned out. The knee-jerks were equal and normal, but on one occasion I could not obtain them.

*Convulsions.*—I have already alluded to the fact, recognised by all authors, that the onset of the disease is usually by convulsions, and that in a large number the fits are unilateral. As a rule, there are a number of convulsions following in rapid succession, and lasting a few hours or a few days. In two of my cases the convulsions lasted two weeks, in one four weeks, and in one apparently two months before the hemiplegia was noticed. In Case 2 the fits preceded the hemiplegia for six months. It appears probable



that the pathological cause may proceed comparatively slowly in some instances. In the few cases in which convulsions at the onset are absent, it may happen that the paralysed limbs become the seat of spasm at a later date. Cases are recorded (Osler gives five) in which hemiplegia supervened apparently in consequence of a convulsion, hæmorrhage presumably taking place in the brain. It has been thought, too, that the hemiplegia which in some recorded cases has arisen in the course of whooping-cough may have a similar origin. Dr. Samuel West's case ('Clin. Soc. Trans.,' vol. xx, p. 96) appears to be one of this kind.

In the case (No. 5) recorded below cerebral hæmorrhage may have resulted from the convulsion. In favour of this view is the well-known fact that the child's brain is much softer than that of the adult, and that presumably the vessels are less supported and more liable to rupture. The occurrence of permanent hemiplegia after a fit in an adult epileptic must be very exceptional. It is well to bear in mind that convulsions, even of several months' existence, may indicate concomitant gross change in the brain although symptoms are absent (see Case 2). Some of Osler's cases certainly appear to point very clearly to convulsions as a cause of cerebral hemiplegia.

There are two other points to which I shall briefly allude. The first is that convulsions may precede the onset of acute infantile spinal paralysis, and hence in doubtful cases this symptom must not be held to indicate necessarily a cerebral origin of the paralysis.

In the second place, convulsions in children may be unilateral (and are more commonly so in my experience than in adults) without the existence of organic brain disease.

*CASE 5. Right hemiplegia preceded by convulsions for eleven months.—* Male, æt. 2 years and 5 months. The patient was the first child, born at term, but the labour was long, though not instrumental. The mother had "pains" for a month before delivery. The child had three or four fits at the age of seven months, and from that time up to the age of eighteen months had rather frequent "fainting fits." He then had a severe right-sided convulsion and became hemiplegic. He improved very much, but when I saw him the right hand was weak, and he fumbled a good deal when picking up a pin. He walked well, and there was scarcely any weakness of

the right leg. The knee-jerks were normal. The child was mischievous and passionate, but not dirty.

The question of confirmed epilepsy in infantile hemiplegia requires a few words of comment. There is no doubt that there is a liability to the recurrence of the convulsions even after the lapse of years, and even although the hemiplegia has practically cleared up (Case 6). Sometimes the fits continue from the onset without any great interval between the seizures, sometimes they cease for months or years (Case 7). I found in 360 recorded cases of infantile hemiplegia that epilepsy supervened sooner or later in 112.

*CASE 6. Right hemiplegia at eighteen months ; complete recovery ; convulsions at the age of seven years, lasting two weeks ; second recurrence at the age of fourteen, the fits being limited to the side previously paralysed.*—Female, æt. 14, was brought to me with a history of fits beginning in the right shoulder and affecting the right side of the body only. When the child was eighteen months old she was seized with convulsions which lasted a month, and at the end of this time she became paralysed on the right side, arm, face, and leg being affected ; speech was said not to be impaired. There had been no previous illness, and no good reason to suspect congenital syphilis. Recovery was gradual, extending up to the age of five.

I could detect no weakness of the right side of the body. She had been taught to write with the left hand, but she used the right hand for some purposes, and could play the piano. After the onset of hemiplegia she had no fits until the age of seven, when she had seventeen in a fortnight. From that time until a week before I saw her she had been quite free from attacks.

*CASE 7. Left hemiplegia ; left-sided fits at the age of five years without loss of consciousness ; arm paralysed after each convulsion ; recurrence of fits after two years ; slovenly speech.*—Female æt. 8, the youngest of fifteen children, eleven of whom were dead, three alive and healthy. No difficulty in birth of patient. Mother died of tumour of the brain. The child was healthy up to the age of five years, when she began to have fits coming on three or four times weekly. The attacks were said to be unilateral, beginning in the left arm and then extending to the face and leg. Consciousness was not lost. After the fit there was loss of power of the arm for an hour. The convulsions continued for about a year, and then ceased until two weeks before I saw her. She then had seven or eight attacks in which the arm only was convulsed without loss of consciousness. As before, there was paralysis of the arm for an hour afterwards. There was no wasting of the left arm, and the muscular power was as good as that of the right ; but the left hand was clumsy—as, for instance, when trying to pick

up a pin. The friends believed that this had been so since the beginning of the fits. She walked well, but the left knee-jerk was brisker than the right, and the left plantar reflex diminished. No anæsthesia, squint, nystagmus, or hemianopia. Fundi and optic discs normal. Head natural. The speech was rather slovenly, a few of the letters being mispronounced. No marked mental defect. She remained under my care for three or four months, and the attacks appeared to be controlled by bromide of potassium. During this time she had a few fits beginning with tingling of the left hand, which afterwards "twitched;" consciousness was preserved, and there was no loss of power afterwards. More than three months after I first saw her I noted that the left hand was still clumsy and the knee-jerk on that side brisk.

*Speech.*—In some cases speech, if acquired, is lost in infantile hemiplegia; this may be accounted for in some instances by simple shock, or by mechanical interference with the parts concerned in articulation. As a rule loss of speech is associated more with right than with left hemiplegia. Osler gives 13 cases out of 120 in which speech was affected; Wallenberg, 62 out of 160. It will be seen, therefore, that 75 out of 280 were thus affected, or about one quarter. Of these seventy-five, fifty-seven were cases of right hemiplegia and eighteen of left.

The defect appears to be one of either pure motor aphasia or of dysphasia. True sensory aphasia may exist in some cases, but it is difficult to determine in young children. Loss of speech seems to accompany left hemiplegia in the child more frequently than in the adult; but in some cases, no doubt, the loss of words is purely mechanical. It is said that permanent defect of speech may exist; but in most, perhaps all of these there is profound mental change. I cannot say if the slovenly defect of speech in Case 7 was accidental or not.

The rule is for articulation to return in a few weeks or a few months. In Case 1 there was loss of speech in a child of three years associated with left hemiplegia, and the child was probably left-handed.

In Case 8 the loss of speech was associated with right hemiplegia, the child being left-handed. In four other cases in which speech was said to be lost at the onset the hemiplegia was in the right side. In another instance right hemiplegia occurred at the age of nine months, and the child did not talk until he was nearly three years.



Others have noticed delay in the acquirement of speech when the hemiplegia has occurred early.

*CASE 8. Right hemiplegia in a left-handed child ; loss of speech for six weeks after the attack.*—A girl, æt. 7, was attacked a year before I saw her with a right-sided convulsion, and for a week afterwards took no notice. When she came to herself she was found to be paralysed on the right side, and for six weeks was quite unable to speak. Before her illness the child was looked upon as left-handed. A brother and a sister of the patient were left-handed, as was also an aunt on the father's side. The father himself used to stammer. There was no transposition of viscera in the patient or in the brother mentioned above. The hemiplegia was incomplete when I examined the child. The grasp of the right hand was not so good as that of the left, and she was very deliberate in picking up a pin with the right hand. The right leg dragged a little. There was no paralysis of the face, and none had been seen by the mother at the onset.

*Knee-jerks.*—The knee-jerk is often elicited more readily or has a greater range than on the sound side, but it is not uncommon to find the knee-jerk brisk and equal on the two sides (Case 13 is a good example). Sometimes the knee-jerks are quite normal, rarely feeble. Occasionally they have been described as absent, but this must not hastily be assumed, as all who have to deal with large numbers of children are aware of the difficulty commonly experienced in obtaining the knee-jerk. I should doubt if this phenomenon is ever absent in uncomplicated hemiplegia. It is known that the knee-jerk may be wanting in tubercular meningitis, and so it may be that when really absent in infantile hemiplegia the condition is associated with miliary tuberculosis of the brain. I had reason to believe in one case that such was the explanation.

Curiously enough, ankle-clonus, referred to as common by Osler, was not present in any of my cases. It seems likely that clonus is not to be obtained until the power to walk is fully acquired. I have noticed, too, in infantile spasmodic paraplegia of congenital origin and in infantile hemiplegia without acute onset, that clonus is rare ; perhaps the explanation is the same.

*Mental defect.*—In most cases there is some lasting impairment of intelligence, though in many the defect is not great. In a few instances the mental powers seem to be



unimpaired. In a minority the defect amounts to idiocy. It is generally asserted that when idiocy results the hemiplegia is marked and persistent, and that extreme mental defect is usually present when the hemiplegia is double. No doubt this is often so, but intelligence may be good even when the hemiplegia is very marked—as, for example, Case 13, in which there was permanent rigidity, and Case 14, in which there was athetosis. In Case 10 there was distinct mental deficiency although the hemiplegia had practically disappeared.

*CASE 9. Right hemiplegia preceded by general convulsions; idiocy; epilepsy.*—Female, æt.  $8\frac{1}{2}$  years. The patient was the only child. There had been no miscarriage. There was a history of “thrush” and rash on the buttocks at the age of three weeks. When eleven months old the child was suddenly attacked with convulsions affecting the whole body, which lasted three hours. She was then found to be paralysed on the right side, and lay in bed very ill for three weeks. Before the onset of the convulsions the child had had no illness.

At the age of two years the fits recurred, and have continued ever since at varying intervals, the longest period of quiescence being a year. The attacks were sometimes very slight, sometimes severe with general convulsions. The child was mischievous, noisy, almost wordless—an idiot, in fact. The right arm was not short or wasted; when she tried to pick up a pin the fingers sprawled over it, but she succeeded after a time. She walked badly, dragging the right leg and throwing it out: there was no wasting of the lower limb. The knee-jerks were equal and feeble. No paralysis of face was noticeable on the right side.

*CASE 10. Right hemiplegia at eighteen months; convulsions up to the age of fourteen years, then cessation for seven years; almost complete recovery from hemiplegia; mental deficiency.*—The patient was a girl, æt. 21, who had right hemiplegia after convulsions when eighteen months old. She continued to improve up to the age of fourteen, but had fits all this time affecting the right side only. She had had no attacks for the last seven years. I could detect no weakness of the right arm and leg, but there was a little weakness about the angle of the mouth on the right side. She wrote slowly and fairly well, but she preferred her left hand—as, for example, in the use of a knife or spoon. She was certainly defective, but not passionate. She could not wash herself, and had been unable to learn any business.

*Paralysis of the face and tongue.*—There is no doubt that paralysis of the lower part of the face is less marked in infantile hemiplegia than in the ordinary adult form. The mothers occasionally declare that no weakness was present at the onset; but in some of these cases I have found traces

of paralysis, shown, for example, by the child beginning to smile or cry on the non-paralysed side, or by the mouth opening slightly more on that side. In a few instances I have been unable to detect any weakness whatever. I have seen in some cases distinct traces of facial paralysis many years after the attack, but this is certainly exceptional (see Cases 3, 10, 13, and 14). The rule is for the facial paralysis to be comparatively slight even at the onset, and to clear up rapidly and *almost* completely.

*Deviation of the tongue* is even less marked than facial paralysis. I have seen it absent four days after the onset; and in two cases, which I saw a fortnight after the attack, and in which the paralysis of the arm and leg was almost complete, the tongue lay straight on the floor of the mouth. In Case 2, however, deviation of the tongue was present at the onset.

I found deviation to the paralysed side in a child of seven years, who had had hemiplegia at the age of ten months. The left arm and leg were rigid, and there was a trace of facial paralysis (Case 13).

*Course of the hemiplegia.*—As already stated, the facial paralysis usually disappears almost completely at an early date. As in the adult, the leg usually soon regains power, and recovery may practically be perfect (Case 5). In some such cases, however, the knee-jerk will be found exaggerated on the hemiplegic side—the sole indication of the former paralysis (Cases 7 and 11). In favorable cases the only remnant may be some clumsiness of the hand, the grasp being little affected; this may be made evident by getting the patient to pick up a pin, when the fingers sprawl over it in a very characteristic way. If the hemiplegia was on the right side the patient becomes left-handed (Case 6). It seems probable that the hand rarely regains the power to execute perfectly fine movements, such as those involved in writing. Another explanation is that the child may have been taught to use the left hand when the right hemiplegia was still present.

Whichever be the true explanation, there is no doubt that infantile hemiplegia, like infantile paralysis, is one cause of acquired left-handedness.

The term infantile *spasmodic* hemiplegia, often used to designate true infantile hemiplegia, is unfortunate, as very commonly there is no actual rigidity. In those cases alluded to above in which the residual paralysis is in the hand only, and even in some in which there is some weakness of the leg, the limbs are, in my experience, quite flaccid. Cases 4, 12, 13, and 20 were the only examples in my series of marked rigidity; in Cases 12 and 13 there was distinct atrophy. In Case 14 the limbs were atrophied and the seat of athetosis.

**CASE 11.** *Left hemiplegia of six months' duration; no paralysis of leg, but knee-jerk exaggerated.*—Male æt. 8 years. No history of congenital syphilis in the family. Six months previously the child had two fits, and the next day the left side was completely paralysed. There was no antecedent illness.

The grasp of the left hand was weak; he could pick up a pin, but not so readily as with right hand. There was slight weakness of the left side of the face. No deviation of tongue when protruded. There was no notable weakness of the left leg, but the knee-jerk was exaggerated; no clonus.

**CASE 12.** *Left hemiplegia with rigidity; associated movements.*—Male æt. 6½ years. Patient the sixth child. No history of congenital syphilis in family. One child died in convulsions at the age of one year and five months. When the patient was seventeen months old he was seized suddenly, when in apparent health, with general convulsions. Left hemiplegia was noticed a day or two later. He had had no illness whatever before the onset. The left arm was colder, smaller, and shorter than the right, rigid at the joints, the fingers being flexed, and the thumb beneath them. The stiffness was said to disappear at times, and the hand during sleep to be quite open. I noticed during examination that the rigidity became less marked after a time. He could not pick up a pin with the left hand, and when he made the effort there were associated movements of the right hand. When he walked the left arm was held up, partly flexed at elbow and wrist. I believed this to be an associated movement, as it did not appear to be for balancing. The left radial tap was exaggerated. There did not seem to me to be any facial paralysis, but the mother thought that he laughed more on the right side. The left leg was smaller and colder than the right. The knee-jerk was exaggerated; no clonus. There was some impairment of intelligence.

**CASE 13.** *Left hemiplegia with rigidity; no apparent loss of intelligence.*—Female æt. 7 years. At the age of ten months had convulsions lasting two weeks, and at the end of this time became paralysed on the left side.

The left arm was much thinner and colder than the right, the wrist flexed at right angles, the fingers hyperextended at the metacarpo-phalangeal joints, and slightly flexed at the phalangeal. The rigidity was easily overcome, but the parts resumed their old position at once when left to themselves. The left leg was smaller than right and somewhat stiff, and the foot was a little inverted. When walking the left foot was turned inwards, and the whole limb dragged. The tendon reactions of the arms and legs were very brisk, but equal. The mouth opened more on the right side, and the tongue deviated to the left. The child was very intelligent, and had had no fits since the onset.

*CASE 14. Right hemiplegia; athetosis.*—Male æt. 10½ years. Patient the sixth child; labour natural. No history of congenital syphilis in the family. When nine months old had a fall out of bed, but no injury to head was noticed. He was unconscious next day. For two months he was very ill, unconscious and frequently convulsed. Has had occasional fits since the onset, but has been free for at least a year now. It was not known if the convulsions were unilateral. He did not talk until he was nearly three. He then learned rapidly, and at four spoke well.

The patient was an intelligent boy. There was no scar on scalp and no depression or tenderness. There was a little haze of the right cornea, ascribed to "sore eyes" when two years old. There was marked scarring about the angle of mouth, but the teeth were not pegged. The right arm, which was somewhat rigid, was smaller than the left. There were frequent movements, often induced by effort or by excitement, in which there was extension at the wrist, at the metacarpo-phalangeal joints, and at the phalangeal, with separation of the digits. The metacarpo-phalangeal joint of the index was, however, flexed, and the thumb too was flexed at the phalangeal joint during these involuntary movements. The right lower limb was much smaller than the left, stiff, but not shortened. The foot was dropped, and he walked on his toes with the ankle nearly in a line with the leg, the knee being slightly flexed and the whole limb directed outwards. There were frequent movements, in which the great toe became hyperextended, the other toes extended and slightly separated, and the foot as a whole inverted. The knee-jerk was exaggerated on the right side, but there was no clonus. There was some weakness of the lower part of the face on the right side. The tongue was protruded straight.

*Associated movements.*—It is not uncommon when the child is asked to pick up a pin with the paralysed hand to see the thumb and finger of the sound hand as it were picking up an imaginary pin, the face often working simultaneously. Occasionally I have noticed that the paralysed thumb and fingers will make a fair attempt at the imaginary pin when the sound hand is making the effort.



Indeed, the associated movement of the damaged hand in the latter case is much better adapted than when the effort is voluntary. These associated movements are seen frequently in healthy children, but not so marked as in the paralysed. A curious position of the arm during progression, probably allied to these associated movements, was present in Cases 2 and 12. Osler describes a similar condition (p. 37).

Three of my cases proved fatal, but unfortunately no post-mortem examination was allowed. It is possible that Case 16 was tubercular, and hence ought to be excluded from consideration; clinically, however, it conforms to the type of infantile hemiplegia. Case 17 suggests a common cause for the visual defect and probable idiocy and the subsequent hemiplegia. Was it syphilis? Mercury and iodide of potassium, it must be allowed, were ineffectual (see remark on Case 2).

*CASE 15. Right hemiplegia preceded by giddiness, vomiting, and convulsions; acute swelling of thyroid gland; death.*—Male æt. 2½ years. The patient was the eldest child. No evidence of congenital syphilis in the family. When I saw him there was a little desquamation about the right shoulder, but no history of scarlet fever was obtained. The child was said to have had no illnesses. Six weeks previously he had occasional giddiness and vomiting, which lasted three weeks, when he was attacked with convulsions chiefly affecting the right side, and then became hemiplegic. The right arm and leg were almost completely paralysed, but the face only a little weak on the right side. He was intelligent but fretful; the speech had never been affected. The right knee-jerk was exaggerated, the plantar reflex on the right side a little diminished. About five weeks after the onset there was acute swelling of the isthmus of the thyroid gland. A month later I noted that the leg was almost as strong as its fellow, and that he had regained power in the arm. Four weeks subsequently it was noted that he had had three or four faints, and a few days later he had a convulsion and died the next day. No post-mortem examination was made.

*CASE 16. Right hemiplegia; loss of speech; death.*—Female æt. 2 years. The child had right-sided convulsions a fortnight previously, and next day there was right hemiplegia. For two weeks before the onset of the convulsions she had been ailing and fretful, though she had had no definite illness. There was almost complete paralysis of the right arm and leg, and marked weakness of the lower part of the face on the same side. The tongue was straight on the floor of the mouth. The knee-jerks were not obtained; the

plantar reflex was a little diminished on the paralysed side. The child was said to have spoken well before the hemiplegia; but since the attack, although understanding when spoken to, had lost her words. The child was fretful and cried a good deal. I did not see the patient again, but I heard that she died a week or so later. I think the case was probably tubercular, as one child of the family had died of inflammation of the brain; another child, æt. 9 years, was said to have "water on the brain."

*CASE 17. Left hemiplegia in an idiotic child; possible syphilis; death.*  
—Male æt. 8 months. The mother had had one miscarriage before the birth of patient, who was the first child. The presentation was normal, but the labour was protracted, though not instrumental. When six weeks old the child had snuffles and a rash about the buttocks and thighs. He was brought to me because it was thought that he could not see, and because he had nystagmus. The child made an attempt to follow a light, but Mr. Gunn was uncertain if the pupils acted to light. Examination of the fundi was unsatisfactory. The child was probably defective mentally. A grain of grey powder was taken three times daily for some weeks, and the sight was thought by the mother to have improved. Five months after I first saw him and when he was thirteen months old he suddenly became drowsy, and in a few hours was found to be hemiplegic on the left side. During the next twenty-four hours he was unconscious, and had convulsive movements affecting the left arm and leg. There had been no antecedent illness. I made a note twelve days after the onset that the left arm and leg were quite paralysed. I did not detect any paralysis of the face, but the mother said that the left side did not move so well as the right when he laughed or cried. A month later there was distinct regain of power of the leg, and he could move the arm slightly; the knee-jerks were equal and normal. About eight weeks after the onset the left arm was found to be getting stiff and the fingers were generally clenched, but there was no marked increase in the knee-jerk. He took small doses of iodide and bromide of potassium after the attack of hemiplegia. I heard that he died in convulsions at the age of two years, about a year after the onset of the paralysis.

I have recently had a case of the same kind under observation. The patient, who was a child aged five years and a half, was born at term without difficulty. She had had a rash on the buttocks when a few weeks old, as also had another child of the family; no history of miscarriage. The patient had fits when six months old, and continued to have them at varying intervals ever since. The child had always been mentally defective, and when I saw her was idiotic. After a series of convulsion affecting the left side hemiplegia supervened.

It is uncommon to have two distinct attacks of hemiplegia in the same individual. The following case, therefore, deserves to be recorded. If the cause was syphilis, it is interesting to note that mercurial treatment did not prevent the second seizure. It might be urged for this reason that the case was not syphilitic. I do not think, however, that this argument invariably holds good (see Case 2). The second hemiplegic seizure in this patient was not so marked as the first; but from the mother's definite account, and from my own observation, I have no doubt that there had been an attack.

*CASE 18. Left hemiplegia in a child possibly syphilitic, followed by right hemiplegia; subsequent idiocy.*—Female æt. 14 months. The patient was the third child. The two elder children had died; one born at the eighth month when eight days old, the other at the age of one month, of whooping-cough. The mother had had one miscarriage between the birth of the second child and that of patient. When two months old the patient had snuffles and a rash on the buttocks, and between the ages of four and seven months suffered from measles and whooping-cough.

Four days before I saw the child she was attacked suddenly with left hemiplegia, but there were no fits at the onset. Next day and the succeeding two or three days she had some convulsive movements affecting the face and arm, not the leg, on the paralysed side. I saw the child four days after the onset of the paralysis. The left arm was quite paralysed, and the leg was very weak. The limbs were not wasted, but were colder than those on the right side. The left knee-jerk was brisker than the right. There was some weakness of the muscles about the angle of the mouth on the left side. The tongue lay straight on the floor of the mouth. As there was a possibility of the case being syphilitic, I prescribed one grain of iodide of potassium with three grains of bromide of potassium three times daily. Four weeks later the arm and leg had recovered to some extent, and within three months from the onset there was considerable regain of power, and the left knee-jerk was only slightly exaggerated. She was then ordered small doses of grey powder and powdered rhubarb, which she continued to take for three weeks, when cod-liver oil and steel wine were substituted. Three months and a half after the attack of hemiplegia, the child, who had been for two or three weeks rather irritable, had "inward convulsions," and a few days later the right side suddenly became weak. I saw the child two days later, and found that there was some weakness of the lower part of the face on the right side, but I was doubtful about the condition of the arm and leg. The mother, however, asserted that they were weak. I ordered a grain of grey powder twice daily.

Eight months later I noted that the child moved her arms well, but did not

walk. She was very irritable, and had lost the few words she had previously acquired. I saw the child for the last time a year and nine months after the onset of the first attack of hemiplegia. The fits had not recurred, but she was spiteful, mischievous, and dirty—indeed, idiotic.

It is interesting to compare Case 17, in which acute hemiplegia attacked a child with defect of sight and probable idiocy, with the following, in which rigidity gradually attacked the non-hemiplegic side some years later. This later development suggested chronic meningitis or sclerosis of the convolutions; but I can only speculate on the possible connection between it and the acute hemiplegic attack. Syphilis, again, might be the real causative agent.

CASE 19. *Left hemiplegia at the age of seven years, rigidity affecting the right arm and leg five years later.*—Female æt. 15 years. Patient was the ninth child, and had had thrush and a rash on the buttocks when a baby. All the children except one had had “thrush.” The mother had had no miscarriage. The child was quite well and intelligent, and had no illnesses up to the age of seven years. She was then suddenly attacked with left hemiplegia, but it was not known if she was convulsed or unconscious at the time. The hemiplegia remained without change for the next five or six years, when it was noticed that the right leg and then the right arm were becoming weak. The speech became affected a year ago. The left arm was small, stiff, and flexed at the elbow and wrist; the right arm was affected in the same way, but not so rigid. The lower limbs were absolutely powerless, atrophied, and flexed at the pelvis and knees; the knee-jerks were equal and brisk; no clonus. The plantar reflexes were not obtained.

The child was not mischievous or bad-tempered, nor usually dirty in her habits. It was said that she understood when spoken to, and I observed that she looked about her in an intelligent way. The only words she knew were “teacher Bella,” which she repeated from time to time. The heart was normal. There was no optic neuritis, headache, or vomiting. No sign of caries of spine.

The two following cases deserve a record, as the occurrence of hemiplegia in two children of the same family is unique in my experience. The onset was acute in the first patient, and although the labour was prolonged, it is improbable that the case was one of birth-hemiplegia. The second appeared to be one of congenital origin, and there was sufficient evidence to warrant the assumption that meningeal hæmorrhage had occurred during delivery. There was, I think, some suspicion of a syphilitic taint.



CASE 20. *Hemiplegia in two members of the same family.*—Male æt. 1 year and 9 months. Mother had been married nine years. The patient was born at term, the head presented, the labour was long but not instrumental. There was no history of measles, scarlet fever, or whooping-cough. Six months ago the patient had convulsions lasting two hours, and the right side was found paralysed soon afterwards. The arm was stiff and the fingers clenched. The child had never walked, but the leg was weak and somewhat rigid; the knee-jerk was brisker than on the left side, but there was no clonus.

The only indication of facial weakness was shown by the child beginning to smile on the left side. The tongue was protruded straight. The child had never spoken. The heart was normal. There was some rickets, shown by bossing of the head and lateral flattening of the chest.

On inquiry into the family history of this case I was told that neither the patient nor any of the children had suffered from snuffles, thrush, or rash on the buttocks. The first four children, however, had been born dead, and the mother had lately had a miscarriage. The first child which had been born alive was paralysed on the left side; the second was healthy, and the patient was the third.

The eldest child, a female aged five years, was brought to the hospital at my request. The history was that the birth occurred between the seventh and eighth month, that it was a cross-birth, and that the labour was long, lasting two or three days. Means had to be taken to resuscitate the child when born.

The patient was a noisy, mischievous, passionate idiot, unable either to walk or talk. The left side was noticed to be weak when two or three months old. I found that the left arm was small, cold, and rigid. The fingers were clenched, and the hand useless. It was difficult to say if the left leg was weaker than the right; the knee-jerks were brisk and equal. No atrophy of face or head. The tongue was normal. The palate was not arched.

# EFFUSIONS OF BLOOD INTO THE FALLOPIAN TUBE :

A CONTRIBUTION TO THE STUDY OF THEIR ETIOLOGY,  
BASED ON SEVENTEEN CASES VERIFIED  
BY OPERATION.

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IN view of the present very imperfect state of our knowledge respecting the etiology of accumulations of blood in the Fallopian tube, it has occurred to me that it might be useful to bring together the cases that have come under my own observation, and to ascertain (1) how far they bear out the opinion now largely gaining ground, that the great majority of such accumulations are due to tubal gestation, and (2) in what proportion of the cases, in which the clinical history afforded presumptive evidence of tubal gestation, confirmation of the diagnosis was obtainable from an examination of the effused blood. It will be convenient to arrange the cases in groups under the following headings:—I. Cases in which the evidence of tubal gestation is complete; II. Cases in which the evidence of tubal gestation rests mainly or entirely on the clinical history, no embryonic remains or other distinctive products of conception having been discovered in the parts removed; III. Cases in which the evidence is inconclusive; and, IV. Cases in which the

evidence points to other causes than tubal gestation. Some of the cases have already been published *in extenso*. These will be given here in abstract only, references to the full reports being appended. Others are now recorded in full for the first time. Where abstracts of these have appeared elsewhere, as, for example, in the 'Transactions of the Obstetrical Society of London,' in connection with the exhibition of specimens, the fact will be noted in order to prevent confusion.

GROUP I. *Cases in which the Evidence of Tubal Gestation is complete.*

This group is limited to cases of unruptured tubal gestation (with apoplectic ovum). Three cases, operated upon *after* rupture, in each of which an embryo and other parts of the ovum were discovered in the peritoneal cavity, are not included.<sup>1</sup>

CASE 1 (abstract).<sup>2</sup>—H. O—, æt. 27, admitted March 16th, 1891, with a history of recurrent attacks of pelvic pain during the past two months, with absence of menstruation during the same period. There had been no previous pregnancy for seven years. On the day of admission she had a sudden attack of very severe abdominal pain with discharge of clots *per vaginam*. Thinking she was about to have a miscarriage she presented herself at the hospital and was admitted. There was a rounded, firm, not very tense, swelling in Douglas's pouch, connected with left cornu of uterus. The uterus was pushed forwards against the abdominal wall, and was enlarged, flaccid, and empty. Its canal measured  $4\frac{1}{2}$  inches.

The abdomen was opened a week after admission. The left Fallopian tube was found elongated and adherent. Its

<sup>1</sup> These three cases have already been published, two of them in a paper entitled "Three Cases of Early Tubal Gestation," which appeared in vol. xx of these 'Reports,' and the third in the 'Trans. Obstet. Soc.,' vol. xxxiv, for 1892, p. 134.

A full account of this case was given in the last vol. (xx) of these 'Reports' (see paper above cited).

distal end was dilated into a thin-walled cyst, which formed the swelling that had been felt in Douglas's pouch. The cyst was filled with soft, dark blood-clot, in the midst of which was an ovum, about the size of a walnut, with distinct amniotic cavity, and covered externally with chorionic villi. An umbilical cord was found, but no embryo.

The undilated portion of the tube was at least twice its normal size; it measured  $4\frac{1}{2}$  inches in length; its mucous lining was greatly congested; its muscular walls were not thickened.

On the day following the operation, a thick decidual membrane, forming an entire cast of the uterine cavity, was expelled *per vaginam*.

The patient made a rapid and uninterrupted recovery.

CASE 2.—S. E—, æt. 32, married, was admitted into Adelaide Ward, St. Thomas's Hospital, April 4th, 1892, for what she believed to be a threatened miscarriage. She had only once previously been pregnant, now eight years ago. On that occasion she aborted at the fourth month. About the same time she showed symptoms of syphilitic infection, rash, sore throat, &c. She was not at that time married.

From that period up to her marriage, twelve months ago, she was quite well. Menstruation continued regular after her marriage until November 12th, 1891, when her last period ceased. She had no discharge from that time until seven weeks ago. She believed herself to be pregnant. About the beginning of February, 1892, whilst she was cleaning windows, she slipped from the table upon which she was standing, alighting upon the floor on her feet. Two days later she noticed a slight discharge of blood from the vagina, which continued up to the time of her admission (*i. e.* for two months), gradually increasing in quantity, but never very great in amount. Sometimes the blood was bright red, at other times dark and even clotted. She had not had any pain or interference with the general health throughout.

She was a bright, active, healthy woman of ruddy complexion. The breasts were fairly well developed; the areolæ slightly pigmented. The abdomen was generally



somewhat full, and was resonant all over on percussion. On deep pressure in the right iliac fossa, a swelling could be felt extending for 2 inches above the inner two thirds of Poupart's ligament. On vaginal examination a soft, smooth, elastic, well-defined swelling could be felt occupying the right posterior quarter of the pelvis, pushing the uterus an inch to the left of the middle line, and not depressing the vaginal roof. Running transversely across the vaginal roof on the right side could be felt a pulsating blood-vessel of considerable size. The uterus could be moved to a limited extent upwards and downwards independently of the tumour. After some hesitation the uterine sound was cautiously passed, and the canal was found to be  $2\frac{3}{4}$  inches in length.

The diagnosis was unruptured tubal gestation, with apoplectic ovum, or, less probably, an ovarian cyst with recent or still incomplete abortion.

Abdominal section was performed on April 8th, 1892.

A large tense swelling was exposed, situated to the right of the middle line, and consisting of the distended Fallopian tube, with its long axis directed from before downwards and backwards. The tumour was adherent to the posterior surface of the right broad ligament and of the uterus, both of which were displaced downwards, the tumour being above them. Its posterior extremity was firmly adherent to the rectum and the floor of Douglas's pouch. From the uterus, which was small and lying below and to the left of the tumour, a thick band of dense tissue passed in a curve upwards and forwards, connecting the uterus with the tumour. The wall of the distended tube was felt to be extremely thin and tense, and the greatest care and gentleness were necessary to avoid rupturing it whilst separating and elevating it. When brought into view, it was seen to be filled with firm blood-clot. At its distal extremity, and lying with its long diameter closely applied to it, was an oblong projection about  $2\frac{2}{3}$  inches long, of a yellowish colour and covered with a tense thin membrane, though which the parts of an embryo of apparently about the tenth week could be easily seen. The denuded bones of one leg and of part of one arm had escaped through small fissures, and were hanging outside the swelling. The broad ligament was transfixed and tied, and the

tube removed, along with the normal right ovary. No blood was found in the peritoneal cavity. The left appendages were adherent, but otherwise normal, and were not removed.

The peritoneal cavity was douched, a glass drainage inserted, and the abdominal incision closed.

The drainage-tube was removed in twenty-four hours.

There being a good deal of abdominal distension on the day after the operation, an enema was administered after the removal of the glass drainage-tube. This had the effect of bringing away a large quantity of flatus, and of giving immediate and permanent relief to the distension. From this time the patient made an uninterrupted recovery, the highest temperature recorded being  $100.2^{\circ}$ . The sutures were removed on April 14th. The patient was discharged well on May 7th.

The specimen was exhibited at the Obstetrical Society, and a committee, consisting of Mr. Alban Doran, Dr. William Duncan, Mr. Bland Sutton, and myself, was appointed to examine it. The following is a copy of its report, dated May 13th, 1892:—"The specimen consists of an oval body, 9 cm. long by  $6\frac{1}{2}$  cm. in vertical measurement. From one extremity hangs a piece of tissue 3 cm. long, evidently the uterine end of the Fallopian tube. The greater part of the swelling as seen on section consists of a mass of pale red clot, which shows distinct lamination. This clot is invested by the wall of the Fallopian tube. From the other or outer extremity projects a cyst,  $4\frac{1}{2}$  cm. in vertical measurements, and broader below than above. To the upper and outer part of the cyst-wall adheres a foetus, of which the parts are very distinct. The ribs and vertebral column are plainly visible, and the extremities of one side project through the cyst-wall; the lower part of the cyst was occupied by blood-clot. Between the cyst and the clot in the Fallopian tube is a more or less circular, smooth-edged aperture,  $1\frac{1}{2}$  cm. in diameter, which, from the appearance of the surrounding parts, appears to be a constriction of the tube. Immediately below, and internal to the foetal cyst, is the ovary. The foetal cyst is, therefore, part of the tube.

"Our opinion is that the specimen consists of a gravid tube,

of which the larger and inner compartment contains the placenta infiltrated with blood-clot, and the smaller or outer cavity is occupied by the foetus, which is compressed against its periphery by blood-clot.

“There is no proof that the tube has undergone rupture.”

This singularly interesting specimen has been mounted with great care by Mr. Shattock, and is now in the museum of St. Thomas's Hospital. (See Plate I.)

GROUP II. *Cases in which the evidence of tubal gestation rests mainly or entirely on the clinical history, no embryonic remains or other distinctive products of conception having been discovered in the parts removed.*

CASE 1 (abstract).<sup>1</sup>—A. D—, æt. 26, a shirtmaker, admitted August 29th, 1889. Married at fifteen. Has had five children and two miscarriages. Last child fourteen months ago; weaned child at three months. Afterwards menstruated regularly until ten weeks before present illness. She then missed two periods, and considered herself pregnant.

Three years ago, viz. on August 13th, 1886, she had been admitted to Adelaide Ward, on account of a hæmatocele, immediately following what was supposed to have been a miscarriage. The following is an abstract of the notes taken on that occasion:—“Two weeks before admission, patient being then ten weeks pregnant, she received a severe shock from the sudden death of her youngest child. A week after this occurrence she was suddenly seized with severe pain in the lower part of the abdomen and back, which was soon followed by hæmorrhage from the vagina. Next day, while at work, she passed a substance which she believed to be an abortion. There was no further hæmorrhage. She continued at her work for a week, when she was again suddenly seized with violent pain in the abdomen, back, and thighs. She became very faint, cold, and pale, shivered and vomited. On admission a few hours later, she was pale and collapsed.

<sup>1</sup> For full details see vol. xix of these ‘Reports,’ for 1889, p. 186. The specimen was exhibited at the Obstetrical Society of London, and is described in the ‘Transactions,’ vol. xxxi, p. 257.

Temperature on evening of admission  $100^{\circ}$ , afterwards normal, except on one occasion, when it was  $99^{\circ}$ . There was a soft fluctuating swelling in lower abdomen, just above pubes, which was also felt *per vaginam*, occupying Douglas's pouch and both posterior quarters of pelvis. Ten days later no pain, no swelling perceptible above pubes or in the sides of the pelves. Swelling in Douglas's pouch hard and solid. Sound passed in normal direction, but showed slight enlargement of uterine cavity. Discharged August 24th."

After her last confinement, fourteen months ago, she kept her bed three weeks, owing to abdominal pain, from which she still suffered when she returned to work.

Present illness commenced suddenly, when patient was walking out of doors, five weeks before admission, with feeling of extreme illness and faintness, and with loss of consciousness. She was laid on the ground until she recovered sufficiently to be able to sit up, when she was assisted home. There was no vomiting. When she reached home she for the first time became aware, from the condition of her clothes, that a slight hæmorrhage was going on. This went on up to her admission. No clot, membrane, or other solid substance has been observed.

On admission, patient was pale, but otherwise in good condition. The uterus was anteflexed and empty. In right posterior quarter of pelvis, and extending behind the uterus, a continuous, smooth, oblong swelling, excessively tender. Uterus moved independently of the swelling.

The diagnosis was right hæmatosalpinx.

There being no alteration after a fortnight's rest, abdominal section was performed. The retro-uterine space was roofed in by adherent viscera (intestine, omentum, and uterus). Encysted in the pelvis, beneath the roof thus formed, were seven fluid ounces of soft dark blood-clot. A small conical clot of much firmer consistence fell into Douglas's pouch during these manipulations. The uterus was thick and large, and situated in front. The right Fallopian tube was dilated and distorted, its fimbriated extremity open, and continuous with what appeared like a ruptured cyst, the size of a Tangerine orange. In the wall of this cyst was a slight thickening at one spot, which the



presence of a large and very well marked corpus luteum showed to be a portion of the ovary. A portion of the tube measuring  $3\frac{1}{2}$  inches in length was removed. Its outer part was dilated and funnel-shaped, the conical clot already mentioned fitting it exactly. The breadth of the tube when



Dilatation of outer portion of Fallopian tube by a conical clot. The drawing shows the tube laid open, the clot having been removed. On the inner surface of the dilated portion are seen, on the right side, the aperture communicating with the ruptured vein, and, on the left, a scar probably indicating the site of a former rupture.

laid open was, at the narrower or inner end of the dilated portion,  $\frac{7}{8}$  inch; at the outer or wider end  $2\frac{3}{8}$  inches. The length of the dilated portion was an inch and a half. The conical clot was firm on section, with an outer layer of

firmer and browner clot. Its narrow end was uncovered with this brown layer, and was black, like the inner portion, with a central canal, large enough to admit a pin, as though a fine stream had penetrated it. The undilated portion of the tube contained a thread of coagulated blood. On the inner surface of the dilated tube was a circular opening,  $\frac{1}{3}$  inch in diameter, with a raised edge of mucous membrane, and lined with adherent blood-clot. On careful dissection, this was found to be a small cavity beneath a raised portion of mucous membrane, into which a varicose vein had ruptured, the mucous membrane having in its turn ruptured into the lumen of the tube. The tear in the mucous membrane had been at first linear, but now appeared circular, with everted edges. There was a similar, but somewhat smaller and older lesion, on another part of the inner wall of the tube, leading to a small cavity with blood-stained walls. No vessel could be traced in connection with this cavity. No trace of ovum was discovered.

The patient recovered, and was discharged on November 9th, 1889.

*Remarks.*—When exhibiting this specimen at the Obstetrical Society, and on several occasions when alluding to it since, I spoke of it as an example of a hæmatosalpinx due not to tubal pregnancy, but to the rupture of a varicose vein on the inner surface of the tube. Further experience, however, and more mature reflection have caused me to alter my opinion. The clinical history points so strongly to tubal gestation, that the discovery of a ruptured varicose vein in the tube-wall seems insufficient to discredit the evidence it affords. For though this pathological lesion might have sufficed to explain the hæmorrhage, had there been no clinical evidence of tubal gestation, it is evident that the two conditions are not incompatible, and that the discovery of the ruptured vein does not exclude the possibility of a co-existing tubal pregnancy. In fact, what condition is more likely to have given rise to venous enlargement? I have, therefore, while fully alive to the fact that the evidence is somewhat conflicting, decided that, in the meantime, the case comes more appropriately in the second group than in the third.

CASE 2 (abstract).<sup>1</sup>—E. B—, æt. 29, admitted August 19th, 1890.

Married at eighteen. Four children; no miscarriages. Last child five years ago. Menstruation re-established in due course; continued regular until eighteen months ago, when, after having passed two weeks beyond her usual period, patient was seized with a sudden attack of uterine pain, followed in a few hours by a discharge, like that of menstruation. Was in bed three weeks. After that, menstruated regularly again until three months ago. She then missed two periods, and about the time of the third, July 20th, a month before admission, was suddenly attacked with severe pain in lower part of abdomen, compelling her to go to bed. Her face was markedly pale. Next day the pain came on again while she was in a tramcar. It was very severe, and was this time accompanied with vomiting. Her husband met the car and carried her home, a distance of half a mile. She went to bed, and on the following day, a very slight hæmorrhage commenced from the vagina, which continued up to admission. She remained in bed three weeks, the pain gradually diminishing. The pain was chiefly on the left side, shooting down the leg. Whilst in bed, she noticed a lump in the left iliac region.

The physical signs on admission were those of hæmatocele. The uterus was displaced forwards, empty, 3 inches in length. There was a hard lump above the fundus, and there was indistinct thickening in the region of the right broad ligament.

The abdomen was opened on September 4th, 1890. A quantity of old and recent blood-clot was found behind the uterus, encysted amongst adherent viscera. The hard nodule that had been felt above the fundus uteri proved to be the smaller end of a pear-shaped enlargement of the left tube, measuring  $2\frac{1}{2}$  inches by  $1\frac{1}{4}$  inch, firmly adherent to bowel and other parts around, closed at its distal end, and containing firm laminated blood-clot. The swelling on the right side consisted of a cyst of the right broad liga-

<sup>1</sup> For full details see Obstetrical Society's 'Transactions,' vol. xxxiv, for 1892.

ment, about the size of a Tangerine orange. The cyst was filled with blood-clot. There was a rent in the cyst, posteriorly, from which a mass of dark clot was projecting. This was apparently the source of the hæmatocele. The right tube was stretched out on the surface of the cyst and was normal. The right ovary was also normal. The left ovary was not seen. The dilatation of the left tube commenced  $\frac{3}{4}$  inch from the divided uterine end.

The diseased parts were removed, along with the right tube and ovary. No trace of ovum could be found. The patient made a good recovery. She reported herself two years after the operation. She was then stout and well, and was menstruating regularly.

*Remarks.*—The clinical history here was exceedingly suggestive of tubal gestation, and I have no doubt that is what it was. Two periods having been missed, the patient had a sudden and severe attack of abdominal pain, recurring on more than one occasion, and followed two days later by slight hæmorrhage which persisted. There had been a comparatively long interval since the last normal pregnancy, and there was no disease of the tube to otherwise account for the hæmorrhage. Two points in the case call for a word of comment. Eighteen months previously there had been a similar, but less severe, attack of abdominal pain, followed, as in the present illness, by a hæmorrhagic discharge. On that occasion, menstruation was a fortnight overdue. It appears to me highly probable that the symptoms at *that* time were also due to tubal gestation, but at a much earlier stage. That no appearances which could be connected with such an occurrence were seen during the operation, would be accounted for by supposing that the whole contents of the tube, both ovum and clot, were discharged into the peritoneal cavity and eventually absorbed. The other point of interest is how to account for the ruptured blood-cyst of the broad ligament on the right side of the pelvis. Had it any connection with the supposed tubal gestation on the left side? The only explanation I can offer is the one I suggested at the Obstetrical Society, viz. "that one of the veins of the right broad ligament, sharing the general enlargement of the pelvic veins due to preg-



nancy, had ruptured into an already existing broad ligament cyst.”

CASE 3 (abstract).<sup>1</sup>—E. J. S—, æt. 25, admitted December 15th, 1890. Family history of phthisis. Married at eighteen. Two children at seven months; two miscarriages at fifth month, the last one two years ago. After last miscarriage was in bed a fortnight, then got up, but had to return to bed on account of abdominal pain and sickness. Ever since has had a thick yellow vaginal discharge, and has frequently had to keep her bed on account of abdominal pain. Has lost flesh and appetite. Her husband, a sailor, was in Clayton Ward in August, 1890, on account of a severe urethral stricture.

Patient was admitted to Adelaide Ward August 11th, 1890, on account of abdominal pain and weakness. She was examined under ether on August 19th. The uterus was anteflexed and fairly moveable. The left tube felt tender, distinctly enlarged, and firm. Condition on right side less clearly defined, but high up can be felt an irregular body. A few days later patient had greatly improved in health, and the ovaries and tubes were felt of nearly normal dimensions, the appendages on left a little larger than those on right. She was discharged August 30th.

On readmission, in December, patient stated that she had been laid up ever since her discharge until a week ago, and had been losing flesh and strength. She menstruated a week after leaving the hospital, and *not since*. In other words, she had missed three menstrual periods. The uterus was low down, anteflexed, and pushed forwards. Behind and to the right was an even, soft, tender swelling. The vaginal roof was depressed by a soft swelling in Douglas's pouch.

Abdominal section was performed on December 18th, both tubes and both ovaries being removed.

The right tube formed a sausage-shaped swelling, 5 $\frac{3}{4}$  inches in circumference, and was filled with old, firm,

<sup>1</sup> Full report published in a paper on “The Value of Abdominal Section in certain Cases of Pelvic Peritonitis,” ‘Trans. Obst. Soc. London’ for 1892, Case 44.

partly decolourised clot, closely adherent to walls. From the fimbriated end, which was open, a quantity of dark, firm clot projected. Beneath the mucous lining of the tube were some enlarged veins, filled with clot. The left tube was closed at its abdominal ostium, but otherwise appeared normal. Both tubes were adherent to surrounding parts. The ovaries were also adherent, but otherwise normal. A careful examination of the clot was made for the remains of an ovum, but with an entirely negative result. The patient recovered.

*Remarks.*—It seems probable that the old attacks of salpingitis and peritonitis left the patient with damaged tubes; that she became pregnant shortly after leaving the hospital at the end of August; that the gestation was tubal, that the ovum soon became apoplectic, and that there was a tubal abortion. The enlarged and thrombosed veins seen beneath the mucous membrane tend to confirm this view. The occlusion of the left tube was evidently due to peritonitic adhesion around the fimbriated extremity. The fact of the husband having been under treatment for stricture of the urethra points strongly to gonorrhœa as the probable cause of the original salpingitis.

CASE 4.—E. P—, æt. 27, single, a cook, admitted April 24th, 1891. Had scarlet fever in 1886. Eight months afterwards had an attack of severe pain in the left side of the lower part of the abdomen. She has had several similar attacks since. She has been in her present situation at Weybridge for five months. During that time she has felt very unwell and suffered much from headache, but there is no history of a period having been missed. Six weeks ago she had an attack of severe pain in the left iliac region lasting an hour and a half. Four days later the pain returned, and continued to do so every day until three weeks ago, when it became so severe she had to see a doctor, and she has been in bed ever since. On April 7th, and again on April 15th, she vomited continuously for several hours. Her period was due on April 12th, but the discharge did not come in the usual quantity, and she has been losing blood ever since in an irregular way. She admits having been

exposed to the risk of pregnancy on several occasions during the twelve months before she took her present situation, but not during the last six months.

She was admitted to Charity Ward on April 17th. There was then discovered great tenderness, with sense of resistance, in the left iliac region. Temperature normal, pulse 90. Urine showed a trace of albumen. On April 21st I examined her vaginally, and made the following note:—Tense oblong swelling to left of uterus, high above vaginal roof, in posterior quarter of pelvis. Uterus displaced to right; fundus 2 inches to right of middle line; canal of normal length. My diagnosis was distension of left tube; contents probably purulent. The patient was transferred to my care.

On April 30th the abdomen was opened. There was a small quantity of dark fluid blood with some fragments of old clot, and shreds of lymph, in the peritoneal cavity. The uterus was pushed forwards and to the right by a firm tense swelling in the left posterior quarter of the pelvis. This was separated from its adhesions and was found to consist of the left tube uniformly distended with firm blood-clot, the dark colour of which could be seen shining through the thin wall of the tube. The portion of tube removed measured  $3\frac{1}{2}$  inches in length,  $1\frac{1}{4}$  inch in breadth, and  $5\frac{1}{2}$  inches in circumference. From the fimbriated end, the opening of which was large enough to admit a goose-quill, some ragged portions of firm, dark clot were seen protruding. On longitudinal section there was observed in the midst of the firm clot a small angular cavity or fissure with some membranous shreds (see coloured plate). Mr. Bland Sutton saw the specimen, and considered there was no doubt as to these shreds being the products of conception. They have, however, been several times submitted to a microscopic examination by Mr. Shattock, with negative results.

The right ovary and tube were normal. The left ovary was not seen.

The patient made an uninterrupted recovery, and was discharged well on June 3rd.

The specimen is now in the Hospital Museum. See Plate II.

*Remarks.*—The clinical history in this case is not conclu-

sive, but it affords strong presumptive evidence of tubal gestation having occurred some months previous to her admission. If that was the case, the ovum must have become apoplectic at an early stage, before the fimbriated end of the tube had time to close. The acute symptoms immediately preceding admission were evidently due to localised peritonitis around the distended tube, and probably also to the occurrence of some fresh hæmorrhage. The clot was not of recent date and this circumstance tends to support the above explanation of the phenomena. At the same time it must be admitted that the failure to detect any microscopic proof of the presence of chorionic villi or other products of conception leaves the origin of the hæmorrhage to a certain extent doubtful.

CASE 5.—A. B—, æt. 29, married, a tailoress, admitted June 24th, 1891. Has had two children, the last one seven and a half years ago. She suckled the younger child for eighteen months, and, on the day she weaned him, had a severe hæmorrhage, and continued to lose blood for a month. There had been no menstruation whilst she was nursing. After the loss just described she menstruated regularly until April, 1891. During the period that occurred in that month she began to suffer from pain of a dull aching character in the lower part of the abdomen, which gradually became more severe. She missed her period in May, and since that time the pain has become so severe as to compel her to take long intervals of rest during the day, interfering seriously with her work. On June 10th she menstruated at the usual time, and in the usual manner, except that there were clots in the discharge. Since that time there has been a blood-stained discharge, increased by exertion. The pain in the lower part of the abdomen has become more general and continuous. It has been most marked in the iliac and hypogastric regions, which have been tender. For two days in the week before admission she was obliged to remain in bed owing to the pain and general feeling of illness.

On admission, patient was well nourished but anæmic. The uterus was displaced forwards by a large mass occupy-



ing Douglas's pouch and extending to the right side of the pelvis. The mass was elastic and fluctuating, and equal in size to a large orange. A finger could be passed between it and the pelvic wall on the left side. The uterus was moveable and of normal length. A rounded body was felt lying above the body of the uterus. This was thought to be a displaced and distended tube.

The diagnosis was early tubal gestation with apoplectic ovum and hæmatocele.

On July 2nd the abdomen was opened. The omentum was deeply stained with dark blood. A distended Fallopian tube could be felt and seen above, behind, and to the left of the fundus uteri. The wall of the tube was thin and tense, and the dark clot distending it gave it a deep bluish-black colour. The long axis of the distended portion of the tube was directed antero-posteriorly, the fimbriated end being deeply situated at the back of the pelvis. Some dark blood welled up during the preliminary investigation. The tube was found to be connected with the *right* cornu of the uterus, and to have become displaced above, behind, and to the left of the uterine body. On separating it a cavity was opened containing a small handful of soft dark clot with fragments of decolorised clot. The tube was removed along with the adjacent (normal) ovary. The left appendages were normal.

The patient made a good recovery, and was quite well four months afterwards, when she attended to report herself.

The portion of tube removed included half an inch of normal tube at the uterine end, and an outer distended portion 3 inches  $\times$  2 inches, and  $5\frac{1}{4}$  inches in circumference. Its distal end was open, and the fimbriæ were distinct. Its wall was thin and tense; a considerable part of its outer surface was roughened from the attachment to it of firm clot, deposited from the hæmatocele (see Plate III, fig. 1).

The firm clot within the distended tube, and the contents of the hæmatocele, were carefully examined, but no products of conception were discovered. The specimen is now in the Hospital Museum.

*Remarks.*—Supposing this to have been a case of tubal gestation, of which the clinical history leaves little doubt,

the ovum must have become apoplectic, and the vitality of the embryo destroyed during some part of the second month, when only one menstrual period had been missed, and before the abdominal ostium had had time to become closed. It was most disappointing not to find pathological proof of the correctness of the diagnosis, but it seems evident from the series of cases here recorded that such proof is frequently unobtainable. The re-establishment of menstruation after death of the ovum is very interesting.

CASE 6.—M. H—, æt. 27, an ironer, admitted October 13th, 1891. Married six years ago. One child ten months after marriage; labour tedious, attended with severe hæmorrhage. Menstruation re-established three months subsequently. A year later suffered from a yellow discharge and pain on micturition. Three years ago was in the Croydon Hospital for three months on account of pain in the loin and hæmorrhage. Since then has been in excellent health until her present illness.

Four weeks ago, a menstrual period being then a fortnight overdue, patient began to have a blood-stained discharge with some clots, and about half an hour later was seized with violent pain in the right iliac region accompanied with vomiting. In a short time she felt sufficiently well to resume her work. At six o'clock the following morning she was again seized with pain whilst dressing, and had to be assisted into bed. The pain lasted severely for four or five hours, and was again accompanied with vomiting. Two days later she states that she passed a piece of skin. From that time there have been continuous pain and tenderness in the lower part of the abdomen, with occasional exacerbations and vomiting. There has been slight hæmorrhage all the time.

On admission, patient had the appearance of a well-nourished, healthy woman. There was no anæmia. The abdomen was somewhat distended by a doubtfully fluctuating tumour, reaching from pubes to level of umbilicus ( $6\frac{3}{4}$  inches), with a rounded upper margin and considerable irregularity of outline on the left side. There was resonance over the whole swelling. On vaginal examination, the

tumour was found to fill the pelvis, depressing the vaginal vault, especially on the right side. The cervix was directed forwards and to the right; the sound passed  $2\frac{3}{4}$  inches in a direction slightly backwards and to the left. The uterus seemed to be merged into the tumour. The bladder-sound showed the bladder to be lying in the middle line, the point of the sound being felt 2 inches above the pubes.

The patient was kept in bed for six weeks, and the size of the swelling carefully noted from time to time. She had no pain all this time; the temp.  $100\cdot4^{\circ}$  on the day of admission, afterwards ranged between  $98\cdot6^{\circ}$  and  $99\cdot6^{\circ}$ . The diagnosis was hæmatoma of the right broad ligament. The tumour, in spite of occasional variations in size, not having appreciably diminished in the six weeks to more than a very slight extent, it was decided to make an exploratory incision, in case the swelling might possibly after all prove to be a cyst.

The abdomen was opened on November 23rd. A large, tense swelling was found to occupy the greater part of the pelvis. It was entirely covered in front by coils of adherent intestine. These were carefully separated and drawn upwards, exposing the surface of the swelling, which was dark red in colour. During the separation a hole was torn in the anterior surface of the wall of the swelling, a little to the left of the middle line, through which the finger could be passed. The contents of the cyst were felt to be soft and irregular, like old blood-clot, and on withdrawing the finger it was found stained with altered blood. The tumour extended deeply down on the right side to the floor of the pelvis, where its size was so great as completely to fill the right half of the pelvis and depress its floor. The uterus lay deeply behind to the extreme left, bound down by adhesions. The swelling extended quite up to its left anterior border. It was found possible to separate the swelling from its upper, lower, and lateral surfaces, but posteriorly it appeared continuous with the peritoneum, covering the pelvic floor and walls.

The position of the bladder having been ascertained by introducing the bladder-sound, the incision was extended downwards, and, it being now evident that the tumour

could not be entirely removed, an opening was made transversely in its anterior wall, and a large quantity of blood-clot, of varying age and appearance, removed by the hand. The upper portion of the tumour having been thus emptied, it was found that the upper and lower portions communicated with each other by an aperture large enough to admit two fingers. Through this aperture the lower part of the tumour was emptied of a quantity of clot which was adherent to the wall of the cavity. The walls of the two portions were of different colour and consistence, that of the lower (the broad ligament) being thicker and less dark. The clot was quite free from odour. The quantity measured was 10 fl. oz., but some was lost, and a little unavoidably escaped into the peritoneal cavity. An attempt was made to secure the edge of the opening in the sac by pressure-forceps with a view to tying it to the edges of the abdominal incision, but the tissue was too friable. A portion of the upper cyst (right tube) was therefore drawn out of the wound; and, when no more would come, the portion already outside was cut off, and the edge of what remained secured to the edges of the lower part of the abdominal incision by means of silk sutures, two on each side, one above and one below; the last-named passing through the anterior margin of the aperture of communication with the lower swelling. No toilet of the peritoneum was attempted, the operation having already been prolonged, and the patient's condition rendering it advisable to finish it as quickly as possible. An india-rubber drainage-tube was passed within the lower sac, and a glass drainage-tube was passed into the peritoneal cavity, entering above the sutured sac-mouth, and passing down to the floor of the left side of the pelvis past the right border of the displaced uterus. The upper part of the abdominal wound was then closed by sutures of silk-worm gut, the usual dry dressings applied, and the patient removed.

The clot removed was carefully examined by Mr. Shattock for remains of an ovum, but with a negative result. The sac wall removed was thought at first to be chiefly muscular, and the idea of hæmorrhage into one horn of a bicorned uterus suggested itself. But on microscopical examination it was found to owe its thickness chiefly to inflammatory



exudation, the appearances being those of connective tissue. It seemed evident, therefore, that the sac-wall was not a part of the uterus, but most probably was part of a distended tube.

For the first hour and a half the patient's pulse was rapid and of good volume; it then became slow and weak, and the patient herself became very pale.

The glass tube was removed in forty-four hours, and the stitch tied. The india-rubber tube inside the sac was left undisturbed. On November 26th (fourth day) the stitches binding the mouth of the sac to the abdominal incision were removed; the discharge was slightly offensive. On December 1st some small sloughs came away. On the 9th the discharge consisted of thick pus, and had ceased to be offensive. The temperature remained high up to the 18th January, after which it did not reach 100° F. From that date the patient rapidly improved, gaining flesh and colour, and on February 13th she left the hospital. There was no hardness or exudation remaining in the pelvis, but there was still a small sinus at the lower angle of the wound, which eventually closed.

*Remarks.*—There can be little doubt from the clinical history that this was a case of tubal gestation, in which apoplexy of the ovum occurred, with rupture of the tube, and escape of blood between the layers of the broad ligament. Had the true condition of things been known, probably the wiser course would have been to leave the case to nature.

CASE 7.—K. A—, æt. 34, admitted May 14th, 1892. Menstruation regular from age of 16 until after her first marriage in 1877. Her first child was born in February, 1878. In the fourth month of her pregnancy she had severe pain in the left side of the abdomen, with much sickness and vomiting, and was in bed for six weeks. The labour was protracted and terminated instrumentally. Hæmorrhage followed, and she was pale and weak for some time. She nursed her child for twelve months, menstruation being re-established four months later. After one normal period she became pregnant for the second time, and about the third or fourth month was again confined to bed for some

weeks with an attack similar to the one she had during her first pregnancy. She was delivered prematurely in January, 1880, at about the seventh month, labour being apparently induced by a fall. She again became pregnant in October, 1882, and between the third and fourth month was attacked with severe pain, as on the two former occasions, and was confined to bed for five or six weeks. Delivery took place in June, 1883, after a protracted labour, terminated by the use of instruments. Hæmorrhage occurred both before and after labour, and patient was very weak and ill for four months. Her husband was drowned at the end of 1884. During her widowhood her health was good. She married again in September, 1890, and continued to menstruate regularly until January, 1891, when she fell and injured her elbow. From that time menstruation has been irregular, the intervals being sometimes five or even eight weeks, the flow scanty and often only lasting a single day.

Her last menstrual period ceased November 15th, 1891. On February 3rd, 1892, after feeling unwell for three or four days, she had a sharp and sudden attack of hæmorrhage, and there has been irregular hæmorrhage from that time up to her admission, that is, for three months. The blood has sometimes been red, sometimes dark brown. For about eight weeks she remained entirely in bed. She then, for a week or two, sat up in a chair part of a day, but was unable to sit for more than three or four hours at a time. After that she remained in bed altogether. At no time during the three months has she been able to take any part in the work of the house. Pains like those of labour came on at irregular intervals, followed by an increased discharge of blood and subsequent relief. Between these attacks she was free from pain. No membrane or other solid substance has been observed in the discharges. On May 11th, after being free from pain for a fortnight, she had a more severe attack than usual. She attended a public dispensary, where some attempts were made to reduce what was thought to be a retroverted gravid uterus. Dr. Wheaton subsequently saw her, doubted the correctness of the diagnosis, and sent her into the hospital.

She is a fairly well-nourished woman, with dark complexion.

Her temperature on admission was 99°. Nothing abnormal could be detected on examining the abdomen. A vaginal examination was made under anæsthesia. The uterus was of normal length and somewhat retroverted. In Douglas's pouch, adherent to and moving with the cervix, was a swelling of the breadth of two fingers, lying obliquely, with its upper and outer extremity directed to the right. The swelling was soft, even, and elastic, and bulged the upper part of the posterior vaginal wall forwards. An impulse was conveyed from the fundus uteri to the cervix, but not to the swelling behind it. The right uterine appendages could not be felt in their normal situation. The left could be distinctly mapped out and were normal.

The swelling was diagnosed as the right tube distended with blood, and adherent in Douglas's pouch, and the case was thought to be one of tubal gestation with apoplectic ovum.

Three days after admission the pain ceased and the hæmorrhage diminished.

The abdomen was opened on May 26th. A smooth, oblong, soft swelling, surrounded by recent adhesions, and about equal in size to a pigeon's egg, was found in Douglas's pouch. On being separated and brought to the surface, it proved to be a distended portion of the right Fallopian tube, close to, but not actually involving, the fimbriated extremity, which was sufficiently patulous to admit a probe. The swelling was of a dirty yellowish-brown colour, and evidently contained altered blood-clot. The isthmus of the tube was of normal calibre, and on section was seen to contain a small quantity of brown material (altered blood) in its lumen. The tube was divided and removed. The ovary being normal, was separated from its adhesions, but not removed. There was no free blood in the pelvic cavity.

The patient made an uninterrupted recovery, and was discharged well on June 25th.

The specimen was exhibited, unopened, at the meeting of the Obstetrical Society, held June 1st, 1892,<sup>1</sup> and a committee, consisting of Dr. W. Duncan, Mr. Doran, Mr. Bland Sutton, and myself, was appointed to examine and report upon it. The following is a copy of the report submitted

<sup>1</sup> See 'Trans. Obst. Soc. Lond.,' vol. xxxiv, for 1892, p. 182.

to the Society :—"The specimen consists of the greater part of the right Fallopian tube, 7 cm. in length. Immediately above the abdominal end is an oval swelling of the size of a pigeon's egg, which projects freely outwards. The ostium is patulous and surrounded by fimbriæ, which are somewhat œdematous. The canal of the tube is not only pervious but dilated, so as to measure 0·5 cm. at its narrowest part. On section, the oval swelling is found to be a cyst filled with apparently homogeneous clot. On clearing out the clot, which is partly adherent, the wall of the cyst appears simple, without any evidence of former loculi. No communication with the canal of the tube can be detected. There is a ragged hole immediately above the fimbriæ, apparently artificial.

"On microscopical examination of the clot no chorionic villi could be detected. The clot was intimately adherent to the wall of the cyst, and the epithelial investment of the mucous membrane did not exist."

*Remarks.*—This was in many respects a remarkable and obscure case. The clinical history led me to feel pretty certain that I should find distinct evidence of tubal gestation with apoplectic ovum. But although there can be practically little doubt that the case *was* one of tubal gestation, no pathological evidence to that effect was forthcoming. The effusion of blood was apparently homogeneous, and was contained in an expanded portion of the tube, which, like the sacculus in Case 2 of the first group (see Plate I), had been formed at the expense, not of the whole circumference of the tube, but of a limited portion of the tube-wall on its upper side only. This pouch-like dilatation had, in a manner that at present seems quite inexplicable, apparently become shut off from the rest of the tube, no aperture of communication being discoverable. An excellent water-colour drawing of the appearances presented by the specimen on section has been made for me by Mr. Holding.

CASE 8.—E. P—, æt. 26, admitted August 8th, 1892. Was married at seventeen, and has had three children, eight, six, and four years ago respectively. The labours and puerperia were normal. In June, 1891, she missed



two periods, suffered from morning sickness, and believed herself to be pregnant. Menstruation returned, however, apparently in consequence of a fright, without any excessive loss or passage of clots. After that she continued to menstruate regularly until the first week of June, 1892, when her last normal period occurred, lasting three days. She should again have been unwell on the 1st of July, but no discharge took place. On the evening of the 12th of July, whilst sitting in her kitchen, she was suddenly seized with severe pain in the right iliac region, which lasted from an hour and a half to two hours. She then went to bed, and though there was a feeling of uneasiness in the lower part of the abdomen, she was free from severe pain, and able to go about her work until the morning of the 15th, when she was seized whilst in bed with a severe pain that lasted about two hours. She remained in bed the greater part of that day. On the following day, July 16th, she noticed a discharge of blood from the vagina, which has continued more or less ever since. She has never from that time been absolutely free from abdominal pain. On the night of July 30th, and again on the night of August 1st, the pain was for a short time severe. She has passed no clots. The character of the discharge is said to have varied, being sometimes dark red and sometimes watery.

On admission, patient is a pale, dark-haired, stout, healthy-looking woman, with a temperature of 100°. The lower part of the abdomen is tender and somewhat full. On examination *per vaginam*, the whole uterus is found pushed forwards so as to lie close up against the pubes and anterior abdominal wall. The fundus can be felt two inches above the symphysis. The canal is straight and a little above the normal length. Behind the uterus, and occupying the right side of the pelvis, is a soft, fluctuating, ill-defined swelling, causing a depression of the vaginal roof, and rising into the abdomen to a line one inch above the fundus uteri, and on a plane posterior to it. In the midst of the lateral part of the swelling can be felt a rounded tense body, firmer than the rest of the mass.

The diagnosis was distension of right Fallopian tube and hæmatocele, due to tubal gestation with apoplexy of the ovum.

The abdomen was opened on August 10th. There was some dark fluid blood free in the peritoneal cavity. The pelvis was filled with a large soft swelling, covered in by adherent omentum. In front, and to the right of this swelling, was a tense, soft, oblong tumour, with the uterus below and to the front of it. On separating some of the omental adhesions, a quantity, estimated at about 12 fl. oz., of dark fluid blood welled up, and about 2 fl. oz. of soft clot were exposed and scooped out by the fingers. The tumour, recognised as the distended right tube, was now separated from its adhesions to the uterus and broad ligament, brought into view, and removed along with the ovary, which, except that it was involved in the adhesions, and covered with a deposit of firm clot, was normal. The left appendages were separated from their adhesions and found to be normal. Two pieces of omentum, infiltrated with blood-clot, were tied and removed.

The patient made an uninterrupted recovery, and left the hospital well on September 7th. An endeavour has since been made to trace her, but without success. She had removed from her former address.

The portion of tube removed measured  $4\frac{1}{2}$  inches in length, 5 inches in circumference,  $\frac{1}{2}$  inch in diameter at its uterine end,  $1\frac{1}{2}$  inch at its distal end, and  $1\frac{3}{4}$  inch at its widest part. It was tensely distended with blood-clot; its walls were thin and of a bluish-black colour; its distal end was sufficiently patulous to admit the little finger. The under surface of the tube was ragged and covered with recent blood-clot.

No organised tissue could be detected amongst the contents of the hæmatocele. The tube was set aside to be hardened before being opened. On February 21st, 1893, Mr. Shattock, in my presence, made a longitudinal section. The clot was firm and homogeneous, without appearance of lamination. The tube wall was very thin. The clot was shelled out from one half of the divided tube, and was carefully examined with the unaided eye in the transverse sections. No trace of ovum or other organised structure was detected.

CASE 9.—S. S—, æt. 28, admitted September 3rd, 1892. Married at fifteen ; five children, the last born two years ago. She suckled her last child eighteen months, menstruation having been re-established at the end of fifteen months. After menstruating twice, she became pregnant. Abortion took place at the third month in December, 1891. She was confined to bed for a week with pain in the right side of the abdomen and in the back. At the end of a fortnight she was quite well. She menstruated twice normally. About the middle of February, 1892, she was seized with a sudden hæmorrhage, accompanied by paroxysmal pain in the right side and back. The hæmorrhage and pain continued, but less severely, until the beginning of April, when the pain became worse and some clots were passed. After that, there occurred a yellowish discharge, and the hæmorrhage became slight.

On April 23rd, 1892, she was admitted into Adelaide Ward. The condition then was as follows:—She had been losing flesh for several weeks. On vaginal examination, there was felt on the right side an irregular, but well-defined mass, apparently consisting of the adherent tube and ovary. The tube was thickened, and passed first outwards, then downwards, backwards, and inwards. The ovary could be distinguished as a softer body, situated between the two arms of the tube, near the uterus which was normal. The patient was advised to have the diseased tube removed. She improved, however, so much in a few days that she preferred to postpone the operation, and on May 2nd she left the hospital, promising to return if the symptoms recurred. Her highest temperature whilst in the hospital was 99·6° F.

After leaving the hospital the patient had two normal periods. She then ceased menstruating until the end of August, when she began to lose considerably. The loss continued up to her admission, and was accompanied by paroxysmal pain, coming on about twice a day, and lasting about a quarter of an hour, in the lower part of the abdomen and thighs. On one or two occasions she had an attack of sickness and shivering.

On readmission she is described as a thin, sallow-com-

plexioned woman. Her temperature was 100°; pulse 80. Urine loaded with lithates, not albuminous. Some vomiting on day of admission.

The abdomen was rigid and tender. On bimanual examination *per vaginam* a mass was felt bulging into the posterior fornix, and extending to a line three inches above the symphysis pubis. To the right a firmer swelling could be defined, separate from the main mass. Between the mass and the pubes lay the uterus, displaced slightly towards the left, and of a little over the normal length.

She had an attack of severe pain on September 13th, and again on the 14th. From that time she had no pain, the hæmorrhage diminished, and the temperature was normal.

The abdomen was opened on September 22nd in the presence of Drs. Parvin, of Philadelphia, Nagel, of Berlin, Mr. Webster, of Merthyr Tydvil, and others.

The contents of the pelvis were roofed in by adherent omentum. This having been separated and drawn aside, the right side of the pelvis was found to be occupied by a smooth-walled, more or less globular swelling, universally adherent except on its anterior surface. It was separated from most of its attachments without rupture, but in separating some coils of intestine the wall was torn, and a quantity of dark clotted blood escaped. In the midst of the clot, with which the right tube was distended, what appeared to be an open sac, lined by a smooth membrane, projected from the wall of the tube into the interior, near the uterine end. On subsequent examination this open-mouthed sac, which at the moment was thought to be the ruptured ovum, proved to be an invagination of the wall of the tube itself. The tube was secured by ligatures and removed. The ovary, which was normal, was left undisturbed.

The coil of intestine to which the tube had been adherent was now inspected, and a ragged portion of tube-wall, about four inches in length, was found intimately adherent to it. This was peeled off with considerable difficulty, leaving a raw bleeding surface, a portion of which was folded in upon itself, and its margins brought together by means of four fine silk sutures.



The left tube and ovary were examined and found healthy, except that the tube was œdematous and distended with serum at its outer extremity owing to the occlusion of the abdominal ostium by adhesion of the fimbriæ. The distended portion was punctured and the fluid evacuated.

The clot removed weighed 9 oz.; no traces of an ovum were discovered. The length of the portion of tube removed was  $4\frac{1}{2}$  inches; its width  $1\frac{1}{2}$  inch. The inner surface of the tube was discolored and uneven from the presence of adherent clot. The main dilatation of the tube commenced about one inch and a half from the divided uterine end. The projecting open-mouthed sac, formed by an invagination of the wall of the tube, had an estimated diameter of an inch. A portion of the invaginated tube-wall was set aside to harden for microscopical examination.

The patient made a rapid and uneventful recovery, and left the hospital well on October 19th.

CASE 10.—R. M—, æt. 22, a machinist, admitted November 2nd, 1892. Married June, 1886; three children, last one December 25th, 1889; no miscarriages. Last menstrual period began August 28th, 1892. Present illness dates from September 25th, when, the menstrual period being a week overdue, she had a sudden and profuse hæmorrhage whilst at her work. The hæmorrhage was accompanied with faintness, nausea, and bearing-down pain of so severe a character that she could not rise from her chair. After the worst pain was over she lay down for half an hour, and then resumed her work, though still in great discomfort from a feeling of internal soreness and burning. These sensations have continued ever since, along with slight hæmorrhage. There have been three exacerbations since the first attack, each marked by pain, vomiting, and increased loss of blood. The first of these was about a fortnight after the onset, the second was about ten days later, and the third and most severe occurred on the day before her admission. Some clots were passed on the 25th September, and again on the 1st November, but nothing like a solid substance or membrane has been noticed in the discharge.

When admitted, patient was a pale, but otherwise healthy

young woman, well nourished, and in excellent spirits. Her appetite was good. Urine normal.

Nothing abnormal was detected on examination of the abdomen.

A vaginal examination was made under anæsthesia. The cervix uteri was normal; canal closed. Posterior and right lateral fornices slightly depressed by a mass situated in the posterior part of the pelvis, and extending across it, being most marked on the right side. The mass was about the size of two adult fists, and was closely connected with the cervix. It was moveable to a slight extent between the hands; but neither it nor the uterus could be moved independently the one of the other. Uterus anteflexed; canal  $2\frac{1}{2}$  inches long. *Per rectum*, the mass was found not to project into the bowel to any considerable extent.

The upper limit of the mass was 4 inches above the pubes, and  $2\frac{1}{2}$  inches below the umbilicus.

On November 8th, after some increase in the amount of discharge and pain, of half an hour's duration, a clot was passed. There was no rise of temperature or vomiting.

On November 23rd the general health and spirits remained good; the discharge was slight. The upper limit of the mass reached to half an inch below umbilicus; the vaginal roof was not now appreciably depressed. The mass was nearer the abdominal wall on the right side than on the left. The patient has been in bed and on full diet since admission. Her highest temperature has been  $99\cdot4^{\circ}$ .

On November 28th the abdomen was opened. A smooth-walled swelling lay behind the uterus and right broad ligament, adherent everywhere except on its anterior aspect. During its separation, a quantity of dark fluid blood escaped, and about five fluid ounces of soft dark clot. The right ovary and tube were connected with, and formed part of the swelling. The ovary was large, œdematous, and adherent, but otherwise healthy. The uterine end of the tube for a distance of an inch and a half was normal. The outer portion,  $2\frac{1}{2}$  inches in length, was dilated and filled with blood. Just within the open abdominal osteum, was a small, firm, oval blood-clot, measuring 1 inch by  $\frac{5}{8}$  inch. No membrane or other organised structure was discovered either amongst the

fluid blood or the clot. Attached to the distal end of the dilated tube was a torn, irregular flap of thick tissue, apparently part of the wall of the blood-containing cavity. The left uterine appendages were healthy.

The patient made an uninterrupted recovery, the highest recorded temperature during her convalescence being  $100\cdot2^{\circ}$ . She was discharged well on December 17th. No abnormal swelling could be felt in the pelvis; the pouch of Douglas was apparently obliterated by adhesions.

She presented herself on February 24th, 1893, three months after the operation, looking and feeling perfectly well. She had menstruated twice normally.

### GROUP III.—*Cases in which the Evidence is inconclusive.*

CASE 1.—(abstract).<sup>1</sup>—N. B—, æt. 33, admitted June 8th, 1889. Married at 16. Four children, one miscarriage; last child born nine years ago. In the third week of the last puerperium got her feet wet and had an attack of severe abdominal pain, for which she was poulticed and kept in bed for a fortnight. Has never felt strong since. Menstruation regular up to commencement of present illness. For six weeks previous to admission had continuous uterine hæmorrhage with occasional passing of clots. Five days before admission, and again on the day preceding admission, was suddenly seized with acute abdominal pain, accompanied with rectal and vesical tenesmus, vomiting and alarming faintness. Similar symptoms presented themselves on the eighth day after admission, and again on the sixteenth day. On the day of admission the hæmorrhage, hitherto slight, became profuse, and she passed a “whitish lump” *per vaginam*. The physical signs on admission were those of pelvic hæmatocele. The recurrence of the symptoms of fresh internal hæmorrhage determined me to open the abdomen. Thirty fluid ounces of fluid and clotted blood were found in the peritoneal cavity, surrounding the right Fallopian tube, and shut off from the upper part of the peritoneal cavity by a thick roof composed chiefly of firm clot and omentum. The right Fallopian tube

<sup>1</sup> The details of this case were published in the nineteenth volume of these ‘Reports,’ p. 182.

was evenly distended by firm blood-clot. Its uterine end was normal. Its fimbriated end was widely open, and dark clots protruded from it. The diameter of the abdominal ostium was an inch; the fimbriae were folded back upon the outer surface of the tube, which was surrounded by a thick coat of firm, adherent blood-clot. The walls of the tube were healthy. The portion of tube removed measured 3 inches in length and 2 in width.

The contents of the tube were carefully examined by Mr. Shattock. No products of conception were discovered, the contents consisting solely of firm, laminated blood-clot. The inner surface of the tube was normal, except that its rugae had become obliterated from distension. The blood removed from the pelvic cavity was also carefully examined for traces of an ovum, but with entirely negative result.

The patient made a good recovery, though not without some pelvic suppuration, and the formation of a sinus, which ultimately closed six months afterwards, on the escape of a silk ligature.

The specimen was exhibited at the Obstetrical Society, and is described in the 'Transactions,' vol. xxxi, for 1889, p. 226. It is now in the museum of St. Thomas's Hospital (see Plate III, fig. 2).

*Remarks.*—There are several facts in favour of supposing this case to be one of tubal abortion, *e. g.* (1) the long interval that had elapsed since the last pregnancy; (2) the history of an attack of pelvic inflammation after the last confinement, and (3) the absence of inflammatory change in the walls of the distended tube or other morbid condition likely to be a source of hæmorrhage. There is, however, no history of missed menstruation. This may, of course, be explained by supposing that the hæmorrhage occurred very early, for example, in the fourth week, a view that is rendered the more probable from the widely open abdominal ostium of the tube, a condition seldom found after the sixth week, and probably never after the eighth.

On the whole, however, the clinical evidence in favour of tubal gestation is scarcely strong enough, in the absence of pathological confirmation, to justify the inclusion of the case in Group II.



CASE 2 (abstract).<sup>1</sup>—C. P—, æt. 31, a healthy-looking charwoman, admitted January 8th, 1891. Married at twenty-four; one child a year afterwards. Two months after confinement suddenly seized with pain in the lower part of the abdomen, chiefly on the left side. The pain was very severe. From that time patient has been liable to attacks of pain of a similar character, accompanied with headache, nausea, and faintness. During the last month the attacks have been more severe and frequent, obliging her to be for the most part in bed, and completely incapacitating her for work. No menorrhagia or vaginal discharge.

On admission, a large mass directly continuous with the left cornu of the uterus and filling the left posterior quarter of the pelvis. The mass was hard and nodulated posteriorly, and terminated behind the uterus in Douglas's pouch. Some ill-defined thickening on the right side. No depression of vaginal roof. Uterus normal in length, anteflexed, and displaced to the right. The diagnosis was left pyosalpinx.

Abdominal section performed January 22nd, 1891, showed both tubes to be dilated and universally adherent, their distal ends being firmly matted in the retro-uterine pouch. The inner half of the left tube was normal; the outer half was expanded in the form of a funnel and contained firm, dark blood-clot. From the widely open mouth of the tube, clot was seen protruding into a small hæmatocele in Douglas's pouch, equal in size to a Tangerine orange, and hemmed in on all sides by adhesions. The right tube was dilated and occluded, forming a hydrosalpinx. It measured  $2\frac{1}{2}$  inches in length, and  $1\frac{1}{2}$  inch in its greatest breadth. Its closed end measured an inch by an inch and a half. Both ovaries were cystic and equal in size to a pigeon's egg. The ovaries and tubes were removed, and the patient made a good recovery.

No evidence of the remains of an ovum was detected.

*Remarks.*—It is possible this was a case of early tubal abortion, but the clinical history does not warrant a decided opinion, and no products of conception were discovered

<sup>1</sup> Full notes of the case will be found in my paper "On the Value of Abdominal Section in certain Cases of Pelvic Peritonitis," 'Obstet. Soc. Trans.' for 1892, p. 384.

amongst the clot. Hence, the origin of the hæmorrhage must be regarded as uncertain.

GROUP IV.—*Cases in which the Evidence points to other Causes than Tubal Gestation.*

CASE 1 (abstract).<sup>1</sup>—M. M—, æt. 26, married, a winder in a cotton mill; admitted into St. Mary's Hospital, Manchester, September 25th, 1885, complaining of continuous pain in the lower part of the abdomen, especially on the right side and down the right thigh. The pain had existed for seven years, commencing soon after the birth of her only child, but had been more severe and continuous during the past two months. Recently there had also been persistent hæmorrhage from the uterus.

The woman was thin and anæmic, with a haggard countenance, indicative of suffering.

On bimanual examination of the pelvis the right side was found to be occupied by a firm, oblong swelling, very tender to the touch, pushing the uterus over to the left of the middle line.

Abdominal section was performed on October 7th, 1885. The right ovary was equal in size to a hen's egg and cystic, the contents consisting of dark fluid blood, altered by long retention. Closely connected with the diseased ovary was a thick fusiform swelling, consisting of the Fallopian tube distended with blood, partly fluid and partly clotted, the walls of the tube being much thickened by chronic inflammation, and firmly adherent externally to a coil of small intestine. The left tube was healthy; the left ovary was the subject of early cystic disease and was removed.

The patient made an excellent recovery.

*Remarks.*—In bringing this case before the Obstetrical Society, I stated it to be "a case of chronic unilateral salpingitis, in the course of which hæmorrhage had occurred,

<sup>1</sup> Fully reported in a paper entitled "Abdominal Section for the Removal of Small Intra-pelvic Tumours," 'Brit. Med. Journ.,' January 30th, 1886. See also "Abdominal Section in certain Cases of Pelvic Peritonitis," 'Trans. Obst. Soc.' for 1892.

distending the tube with blood. Such cases are distinguished from "effusions of blood due to tubal gestation," not only by the discovery of chorionic villi in the latter, but also by the condition of the walls of the tube, which, in the case of . . . tubal gestation, are, as Bland Sutton has pointed out, abnormally thin instead of being abnormally thick. In the one there is simple distension, with, at the most, some turgescence; in the other, there is inflammation as well as distension. The co-existence in cases of inflammatory hæmatosalpinx of blood cysts in the adjacent ovary is by no means infrequent."

The clinical evidence goes to show that the patient had an attack of pelvic inflammation, probably of septic origin, soon after her child was born, seven years previously. As she had no cessation of the menses since their re-establishment, or other symptom of pregnancy, it is reasonable to regard the hæmorrhage, both into the tube and into the ovarian cyst, as mere incidents in the course of a chronic inflammation.

CASE 2.—C. M—, æt. 53, a widow, admitted June 19th, 1890. She had borne one child thirty-three years ago, and had not been pregnant since. Her husband died ten years ago. Menstruation ceased at the age of 49. She received a sudden shock owing to the sudden death of her sister in February, 1890, from which time she was observed to be unusually pale, and to be gradually becoming thinner and weaker. The abdomen also began to enlarge.

On admission, there was marked enlargement of the abdomen, which was tense and elastic. The percussion-note was dull over the iliac and hypogastric regions; above the umbilicus it was resonant, and in the middle line and on the left for two or three inches below the umbilicus. An ill-defined mass could be felt in the right iliac region.

An exploratory incision was made on the 26th June, 1890. A quantity of blood-stained ascitic fluid escaped when the peritoneum was opened. A band of adherent peritoneum, containing a large, soft, dark clot, lay immediately beneath the line of incision. On passing the hand within the abdomen a large, soft, solid tumour was felt to be lying across the

pelvis behind the uterus, extending from the right lateral wall to a considerable distance beyond the middle line. It was adherent on all sides. On separating the adhesions the wall of the tumour gave way and a large quantity of soft blood-clot escaped, of which some portions were yellowish-white in colour, some brown, and some purplish-red. The tumour proved to consist of the right Fallopian tube, enormously distended. The ovary of the same side was cystic and equal in size to a hen's egg. The microscope afterwards showed it to be carcinomatous. It was exceedingly difficult to distinguish the various tissues and viscera of the pelvis. The uterus, for example, was only recognised after passing a sound, when the organ was found lying to the front, with extremely thin walls. After separating the adhesions as far as practicable, the thickened right broad ligament was trans-fixed and the enlarged tube with the adjacent ovary were removed as completely as was practicable; but about half the ovary had to be left.

The patient recovered from the operation, but, three months later, her medical attendant, Dr. Geo. St. John Oldham, informed me that the abdomen was apparently filled by a large mass of recurrent growth.

*Remarks.*—Whatever may have been the origin of the hæmatosalpinx in this case, it is absolutely certain that it was not tubal gestation. All that one can say positively is that it was associated with carcinoma of the adjacent ovary and with general pelvic inflammation, in a woman of fifty-three, who had ceased to menstruate for four years. It did not seem in this case, as it did in the last, to be connected with a definite lesion of the tube itself.

The next is an example of a hæmatosalpinx of the opposite tube in a case of ruptured tubal gestation. The character of the effused blood excludes the idea of there having been gestation in both tubes. The details of the case having been already published (see vol. xx of these Reports), it will be only necessary to give a very brief abstract here.

CASE 3.—A. J—, æt. 37, married, was admitted June 25th, 1890, complaining of acute abdominal pain with distension and intense tenderness. Her only child was born sixteen



years previously and she had not been pregnant since. Her illness commenced on the 9th of June, when, after having missed two menstrual periods, she had a slight blood-stained discharge, followed in two days by severe abdominal pain, which continued, and became gradually worse up to her admission. I came to the conclusion, on learning the history, that her symptoms were due to ruptured tubal gestation. On opening the abdomen, which I did on June 27th, a quantity of thin, dark blood and a number of small clots were found in the peritoneal cavity. There was no evidence of general peritonitis. There was a ruptured tubal gestation on the left side. The placenta was partially protruding through the rent, and the foetus,  $2\frac{5}{16}$  inches long, attached by the umbilical cord to the placenta, was lying in the abdominal cavity. All these parts gave off an offensive smell of commencing decomposition.

Extending behind the uterus and right broad ligament was a large, tense, oblong tumour, which was recognised as the right Fallopian tube, occluded, distended with fluid, and attached to the parts around by recent and easily separated adhesions. The tube was enucleated without difficulty and removed along with the normal right ovary. The contents of the distended tube proved to be a dark brown viscid fluid, consisting of mucus and altered blood.

The patient after a protracted convalescence, due to her septic condition at the time of operation, eventually made an excellent recovery.

*General Summary.*—The seventeen cases above recorded embrace all the instances of effusion of blood into the Fallopian tube that have come under my own observation. The series is certainly not a very large one, but it is the largest, so far as I am aware, that has yet been recorded as the result of a single experience, and inasmuch as every case was verified by actual inspection of the parts *in situ* during life, as well as by careful examination of them after removal (by operation), it has the special value that attaches to any series of complete records. I use the words "complete" of course, not in the sense of "faultless," but as implying that the clinical histories are in each case followed by an account of the actual appearances presented by the parts when exposed to view, and care-

fully dissected, just as a medical case is said to be complete when the full clinical history is supplemented by a detailed account of the autopsy.

In my opening remarks I mentioned two points, with regard to which it seemed to me specially important that evidence should be elicited, viz. (1) the proportion of cases in which effusions of blood in the Fallopian tube are the result of tubal gestation, and (2) the proportion of cases in which a diagnosis of tubal gestation based on the clinical history is confirmed by the discovery, amongst the effused blood, of distinct remains of an ovum.

In reference to the first of these objects of inquiry, the cases have been divided into the four following groups:—Group I, consisting of cases in which the evidence of tubal gestation is complete, a distinct ovum having been found amongst the effused blood. The cases in this group are two in number.<sup>1</sup> Group II, consisting of cases in which the clinical history points unmistakeably to tubal gestation, but in which no traces of an ovum were detected. In this group there are no fewer than ten cases. Group III, consisting of cases in which the evidence is inconclusive, or, in other words, of cases in which an important link in the chain of clinical evidence of tubal gestation was missing, and in which examination of the tube and its contents gave no clue to the cause of the effusion, either in the form of the remains of an ovum or of any pathological condition of the tube sufficient to account for the hæmorrhage. Two cases only come within this category. And lastly, group IV, consisting of cases in which the evidence points to other causes than tubal gestation. Under this heading are placed three cases.

It thus appears that tubal gestation was absolutely proved to be the cause of the effusion in two cases, was almost certainly the cause in other ten of the cases, and was very possibly the cause in two more, while in only three cases did the evidence distinctly point to other sources of hæmorrhage. Of the cases in the last-named group, the hæmorrhage in the first case was apparently a mere incidental complication in the

<sup>1</sup> If the three cases of early tubal gestation, with rupture into the peritoneal cavity, had come sufficiently within the scope of the paper to be included, the number of cases in Group I would have been increased to five.

course of a chronic salpingitis ; in the second case, that of a woman past the menopause, the effusion in the tube co-existed with cancer of the adjacent ovary ; while in the third case, the effusion was clearly the result of hæmorrhage into a tube already distended by mucus, in which occlusion of the abdominal ostium had occurred as a secondary result of the pelvic peritonitis set up by a ruptured tubal gestation on the opposite side.

With regard to the second object of enquiry, the result is somewhat unexpected and disappointing. In no fewer than ten out of the seventeen cases, strong presumptive evidence of tubal gestation was afforded by the clinical history, and yet the most careful search by a pathological expert failed to detect any trace of the remains of an ovum. The soft clots were carefully washed and examined one by one ; the firmer coagula were hardened and then cut into thin sections for microscopical examination. I know of no surer means than this of detecting the remains of an ovum if they be there.

A consideration of these facts should convince us that a case may be one of tubal gestation, and may even occasionally be legitimately described as such, although no products of conception be discovered. I have always hitherto maintained the contrary, but I can do so no longer. There is practically no doubt that all the cases in Group II were examples of tubal mole or tubal abortion, yet in not one of the ten were the remains of an ovum found.

Mr. Bland Sutton is strongly of opinion that the use of the term hæmatosalpinx should be restricted to cases in which the effusion is due to other causes than tubal gestation. My readers may have noticed that, in this paper, I have studiously avoided the use of the word, either in the restricted sense advocated by Mr. Sutton or in the more general and comprehensive sense as ordinarily employed. I desired to enter upon this enquiry without bias. Now that it is finished, however, I am free to state that, in my opinion, the time has not yet arrived for drawing a hard and fast line between blood effusions into the tube caused by tubal pregnancy, and such effusions due to other causes. Until we have arrived at greater certainty, and are in a position definitely to assign every case to its proper category, it seems to me that it will

be convenient and desirable to retain the term hæmatosalpinx as applicable to all effusions of blood into the tube, from whatever source the blood may have arisen. By attempting to be more definite than the present state of our knowledge permits us to be, instead of accelerating progress we shall be in danger of retarding it.

I do not propose to discuss here the desirability of operating upon these cases. My own opinion on this question is now pretty well known. I may, however, call attention to the fact that in each of the seventeen cases, of which the records are here given, operation resulted in the patient's recovery.

The cases here narrated possess many points of interest, and suggest many lines of reflection to which I have not the time or space to allude, and which must be reserved for another occasion. There is, however, one point to which I should like to refer before concluding this paper (which has already far exceeded its intended limits), namely, the light these cases throw on the difficult subject of the source of the bleeding in pelvic hæmatocele. It will have been observed that in all the cases in Group II, with the exception of Cases 7 and 9, and in both the cases in Group III, that is, in ten out of the seventeen cases, there was an intra-peritoneal hæmatocele, due to the escape of blood from the open fimbriated end of the distended tube. If I am right in regarding these cases as having originated in tubal pregnancy, this out-pouring of blood from the yet unclosed abdominal ostium indicates that either tubal abortion was impending, or had already in whole or in part occurred, and suggests that in many unexplained cases of pelvic hæmatocele the hæmorrhage may have had a similar source.



## DESCRIPTION OF PLATE I,

Illustrating Dr. Cullingworth's paper on Effusions of Blood  
into the Fallopian Tube.

The drawing shows the appearances presented by the distended right Fallopian tube after being hardened in spirit and laid open by a longitudinal section along the middle line. The main part of the tube is occupied by a mass of firm laminated blood-clot. At that end of the distended portion of the tube which lies to the left hangs a tail-like projection, a little over an inch in length. This is the undilated uterine end of the tube. At the opposite end, that, namely, to the right of the drawing, is a pouch formed in the wall of the tube, communicating with the main cavity by a circular, smooth-edged aperture three fifths of an inch in diameter. Against the outer wall of this pouch lies a fœtus, compressed by the mass of blood-clot. The cranial cavity and vertebral column, divided longitudinally, are well seen. The ribs have been displaced downwards *en masse*. The denuded bones of the arm and leg of one side projected through the wall of the pouch, and were hanging outside. The amnion and torn umbilical cord are seen in the body of the tube, having been left behind by the fœtus when it escaped into the smaller compartment beyond. The parts are represented of natural size.

Case 2, Group I.









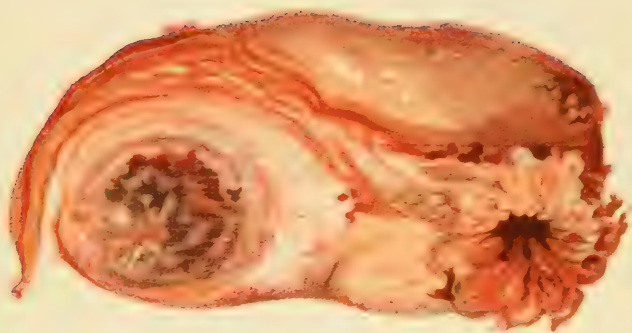
DESCRIPTION OF PLATE II,  
Illustrating Dr. Cullingworth's paper on Effusions of Blood  
into the Fallopian Tube.

Fig. 1.—Fallopian tube distended by blood-clot. The wall of the tube is extremely thin in places, the colour of the contained clot being easily seen through it. The fimbriated end is open, and from it clot was hanging out, there being a small quantity of dark fluid blood and some old clot in the peritoneal cavity. Along the under surface of the tube is seen the divided edge of the thickened meso-salpinx.

The parts are represented of natural size.

Fig. 2.—The interior of the same tube as seen on longitudinal section. The clot is solid and homogeneous, with a well-defined firmer layer where the clot is in contact with the tube wall. In the interior of the clot is seen a long narrow chink, lined by membrane, probably the compressed and empty amniotic cavity. No chorionic villi or other distinctive products of conception, however, could be detected under the microscope in this situation.

From Case 4, Group II.









DESCRIPTION OF PLATE III,  
Illustrating Dr. Cullingworth's paper on Effusions of Blood  
into the Fallopian Tube.

Fig. 1.—Interior of Fallopian tube distended with blood-clot. The clot is firm and homogeneous. The fimbriated end (only partially seen in the drawing) is sufficiently open to admit a goose-quill. Blood had escaped through it into the peritoneal cavity, where there was a small handful of soft dark clot encysted amongst adhesions. The clinical history pointed to tubal pregnancy, but no organised tissues were detected amongst the clot.

From Case 5, Group II. Natural size.

Fig. 2.—Fallopian tube distended with firm clot. The abdominal ostium is widely dilated and clot is hanging from it. The fimbriæ were folded back upon the exterior of the tube; in the drawing they appear unfolded as seen when the specimen was placed in water. The tube was surrounded by a quantity of fluid and clotted blood, measuring thirty fluid ounces, and forming an intra-peritoneal hæmatocele. A firm coat of adherent blood-clot had been deposited on the entire surface of the tube. A portion of this has been removed to show the smooth peritoneal surface beneath. The clinical history was inconclusive as to the existence of tubal pregnancy, and no traces of an ovum were discovered.

From Case 1, Group III. Natural size.



Fig. 1. Fallopian tube distended with blood clot



Fig. 2. Fallopian tube with large fleshy mass



# THE PATHOLOGY OF PERITYPHLITIS.

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BY HERBERT P. HAWKINS, M.B., M.R.C.P.

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THE words typhlitis and perityphlitis are used in different ways. Sometimes both of them are used at random to denote a certain clinical form of disease in the right iliac fossa, which is too well known to need description here. Sometimes one or the other is used in a strict etymological way to convey an idea as to the supposed starting-point and morbid anatomy of the disease. Paratyphlitis was a term introduced by Oppolzer to indicate an inflammation of the connective tissue behind the cæcum. Appendicitis has come to us from America, with the authority of Fitz, and it is a genuine word, indicating a common pathological condition. But though inflammation of the appendix is a common condition, it is one which in itself bears no symptoms, and the word appendicitis therefore cannot be used in a clinical sense.

While the nature of this typhlitis or perityphlitis remained doubtful, the discrepancy in the use of these terms by different systematic writers carried its own excuse. Now, however, that the origin of the disease is more clearly determined, it is surely advisable to employ a definite uniform term connoting both the symptoms and the anatomical site.

The theory which assigned to this disease an origin in the cæcum is almost extinct, but it still lingers. Yet of all our so-called facts in medical teaching, nothing appears to me more certain than the origin of this disease in the vermiform



appendix. From the sudden general rapidly fatal peritonitis, through the common local suppuration in the right iliac fossa, through the still more common non-suppurative inflammatory induration, to the case of slight non-febrile pain and tenderness in this region, there is an unbroken clinical and pathological chain; and all these conditions represent degrees or stages of peritonitis arising from primary disease of the appendix.

Surely then the name of typhlitis may be dropped, for the cæcum has no closer connection with any one of these conditions than that of mere juxtaposition to the seat of primary trouble. Paratyphlitis stands self-condemned, for, as Treves showed in his Hunterian Lectures of 1885, the cæcum is always completely covered by peritoneum, and never has one side in contact with connective tissue. Appendicitis, however, indicates a common affection which underlies all these conditions, and it is a good pathological term; while perityphlitis and peritonitis may rightly be used as clinical terms, according as the resulting inflammation of the peritoneum is local or general.

#### *The Cæcal Theory.*

In reading through the writings on this subject chronologically arranged, it is interesting to note the progressive depreciation of the cæcum, and the corresponding rise in the importance of the appendix and the peritoneum around it. For the first forty years of this century perityphlitis was entirely attributed to disease or disordered function of the cæcum. The appendix did not appear in the field of practical medicine until 1834, and when we consider the functional insignificance of this organ we cannot wonder that it so long escaped recognition.

In the literature of the beginning of this century descriptions of perityphlitis, phlegmon of the iliac fossa as it was then called, are abundant, its symptoms and course being set forth with great accuracy. Few writers, however, ventured upon an explanation of its origin, or it might be that to a perfect clinical picture would be appended an account of an autopsy, in which no mention, positive or negative, is made of the appendix, and it was in fact never examined.

The appendix has now obtained a tardy recognition as a factor in its production; but the part played by it is still under-estimated, and no writer has completely emancipated himself from this theory of a cæcal origin, for which Dupuytren was primarily responsible.

The paper by Dupuytren ('*Leçons orales de clin. Chir.*,' 1833), in which the theory first took form, is a model of close reasoning founded on loose observation. Inflammation in the right iliac fossa does not commonly prove fatal, and when death does occur the parts in the fossa are so embedded in pus and thick lymph that their unravelling is attended with considerable difficulty. The vermiform appendix readily escapes attention, while the intense inflammation of the peritoneal coat of the cæcum cannot but have a secondary effect upon the subjacent mucous membrane, which is manifested by hyperæmia and catarrh apt to mislead the observer. And when a local abscess arises round the appendix, it not uncommonly perforates the wall of the cæcum, and from this again error arose. In Dupuytren's account of an autopsy the appendix is not even mentioned.

In 1880 With (see '*London Med. Record*,' vol. viii, p. 213) was the first to state his disbelief in the existence of an inflammation in the right iliac fossa arising from disease of the cæcum as distinct from the appendix.

The article of Fitz ('*Trans. Assoc. Amer. Phys.*,' 1886) was a truly great contribution to our knowledge of disease of the appendix. Yet even here the cæcum is still fully in view. It is true that he speaks of the extreme rarity of a primary perforating inflammation of the cæcum, but he describes the symptoms of a "stercoral cæcitis the most important of all the conditions with which the perforating appendicitis may be confounded."

The latest and best account of perityphlitis is to be found in Osler's '*Text-book of Medicine*' of 1892. All the forms and degrees of peritonitis arising from appendicular disease are here for the first time brought together under one head. But he too feels constrained to recognise a typhlitis or primary inflammation of the cæcum as a clinical form of disease of unknown pathology.

That the cæcum has any connection with the severe degrees

of perityphlitis, is now so generally denied that disproof is no longer necessary. The whole weight of clinical and pathological evidence is opposed to any such connection. It may almost be said with truth, that every case of inflammatory disease in the right iliac fossa which has proved fatal has been found to be due to disease of the appendix. Osler has indeed met with two cases of perforation of a cæcal ulcer and pericæcal abscess. After extensive research into the literature of the subject Fitz could only find three cases, one from a fishbone, another from a pin, the third from strangulation of the bowel. It will be generally allowed then that a perforating ulceration of the cæcum, though it does certainly occur, is of so rare occurrence that it may be disregarded.

But doubt arises about the origin of the milder and less determinate forms of the disease—the so-called stercoral typhlitis. Is there any ground for continuing to believe in its existence?

It is maintained by some that these mild cases depend on a non-perforating ulceration of the cæcum due to the retention of fæces, in fact on the old-fashioned stercoral ulcer. Doubtless such an ulcer is a possibility, but it must be exceedingly rare, if we exclude those cases of ulceration and rupture of the cæcum which are due to obstruction at a point lower down in the bowel. Post-mortem records maintain an absolute silence about it. The very word “non-perforating” throws doubt on its existence. Do we know any ulcer in any part of the alimentary canal which never perforates the bowel-wall? The cæcum and the appendix are almost identical in structure; there are differences only in the amount and arrangement of lymphatic tissue and muscle. Ulcers in the appendix due to fæcal impaction are, as will be shown later, of very common occurrence, and they perforate its wall with great frequency. It is a hard matter then to believe in a cæcal ulcer of similar origin, which in only two or three recorded instances has ever perforated the peritoneal coat.

Haslam (*‘Lancet,’* October 31st, 1892), in arguing in favour of a true typhlitis, is more precise than most writers as to its morbid anatomy. He says, “The mucous membrane of the cæcum may be inflamed in association with a general colitis, or more frequently from irritation due to retention

and impaction of fæces; the cæcum may be the seat of ulceration either from fæcal irritation, tubercle, dysentery, typhoid, or foreign body." But when the inflammation of the cæcum is part of a general colitis, and when it occurs in the course of tubercle, dysentery, or typhoid, the symptoms are then those of the general disease, and are not those of the local condition in the right iliac fossa which is here under consideration. These general causes must then be excluded, and we are left stranded again with the theory of fæcal irritation and ulceration, in favour of which no actually observed fact has ever been recorded.

If then the theory of a stercoral ulcer be untenable, it may still be said that these cases depend on a catarrh of the mucous membrane of the cæcum unaccompanied by ulceration. This explanation is certainly most in accordance with the clinical history, for these cases of stercoral cæcitis are never fatal and never end in suppuration. It is an explanation, however, which has no foundation on ocular evidence. It was inferred entirely from clinical observation, and the inference was made at a time when the importance of the appendix as a source of disease was not yet recognised. The theory was born of clinicians, yet the clinical evidence against it seems to me to be overwhelming. Fitz speaks of it as being exceedingly common. He describes it as being manifested by pain which is trifling for a long time, by slight sensitiveness, by the absence or late occurrence of fever, and by the presence of a distinct, nodular, or doughy mass in the lumbar region. Osler describes it in much the same terms, but with a shade of doubt. Haslam (*loc. cit.*) draws up a list of points which may serve to distinguish typhlitis from appendicitis.

Now it must be confessed that these symptoms, apart from the presence of a fæcal tumour, are in fact not to be distinguished from those of mild perityphlitis. Just such a condition as this may often be seen to alternate with severe attacks of true appendicular peritonitis, as verified later by post-mortem examination. Even if we grant that the mass felt in the lumbar region is composed of fæces, still we know that in cases of true perityphlitis a large part of the hard iliac tumour is often composed of fæcal matter, which is retained in the cæcum through paralytic interference with its



peristalsis. Hard faecal lumps can often be felt in the caecum as also in the sigmoid flexure, but the patient has no special symptoms and knows nothing of their presence.

We know that a patient with inflammation of the appendix and slight local peritonitis around it may complain of but slight pain, and present but little tenderness and little or no fever, and may at the same time have a considerable area of hardness in the iliac region, which is doubtless in part due to a secondary paralytic retention of faeces. It seems then hardly necessary in any such case to reverse the explanation, and to explain the condition as being due to a primary retention of faeces resulting in inflammation of the caecum.

On reviewing the clinical notes of upwards of 200 cases of disease in this region, about half of which I had personally the opportunity of observing, the following conclusions seem reasonable :

1. That there is a perfect gradation from the sudden general peritonitis, which is almost invariably fatal, down to the condition of slight pain and tenderness in the right iliac fossa, which may or may not keep a man from his day's work. That these several degrees alternate in the same patient, so that he may have one or more slight attacks (corresponding to the description of this so-called typhlitis), and then succumb to a severe appendicular peritonitis, or a severe attack may be followed by several of the milder variety.

2. That there is no break in this chain, and no point at which one may say that appendicular disease ends and caecal disease begins.

3. That, since whenever death occurred from any cause (twenty-three instances in these 200 cases), the primary disease was in every case found to be in the appendix and not in the caecum, there is no justification for thinking that any such cases are of caecal origin.

This so-called stercoral caecitis is never fatal, and consequently the existence of such a condition does not admit of absolute disproof. But a belief in its existence has the grave fault of still affording some foot-hold to the practice of treating inflammatory affections of the right iliac fossa with purgatives, for what man could distinguish between this pseudo-caecal disease and perityphlitis, when on paper, at any rate, they may be expressed in identical terms ?

*The part played by the Appendix.*

Perityphlitis is rarely fatal, and it is at the same time a very common affection. If therefore it is in all cases to be ascribed to disease of the appendix, it is a necessary corollary that in the general post-mortem work of a large hospital there should be found abundant evidence of appendicular disease. And this is found to be the case. Tungal, quoted by Fitz, during a period of two years at the Hamburg Hospital, found thirty instances of partial or complete obliteration of the appendix, forty-three cases of catarrh and fæcal concretions, twelve of abnormal adhesions, and eleven of tubercular ulcers. Toft (cf. the excellent paper by With, loc. cit.) found the appendix diseased in 110 out of 300 post-mortem examinations.

Now it is not certain whether these figures are founded on naked-eye or microscopical examination, and their value consequently is doubtful. I have therefore examined the appendix at this hospital in 100 bodies of all ages taken at random, where death occurred from some other cause than disease of this organ, and if there was any naked-eye appearance of disease the suspected organ was submitted to microscopical examination. In these 100 cases there were 16 in which there was past or present disease of the appendix to be seen. (There were also two cases of tubercular and one of dysenteric ulcer, which may be disregarded as having no connection with the present subject.) In seven of these sixteen there was chronic catarrh, with commencing obliteration of the lumen in one of them; in four the lumen was wholly or in part obliterated by fibrous adhesion of its walls; in five there was ulceration due to the pressure of a fæcal mass. In two of the cases of catarrh the appendix was bound down by old peritonitic adhesions, and this condition was present in all four of the obliteration cases.

It is not safe to draw any large conclusion from 100 cases, but so far as it goes, there is here (16 per cent.) ample evidence that appendicular disease is at any rate of frequent occurrence; and this frequency, moreover, is numerically sufficient to justify us in regarding the appendix as the sole cause of all cases of perityphlitis, mild or severe.

*Appendicitis.*

The primary affections of the appendix which underlie perityphlitis may be realised from microscopical examination, though some points in the causation will still remain unexplained.

Examination of a large number of specimens makes it clear that Osler's division of appendicitis into a catarrhal and an ulcerative form is a good one. Though these two forms do to a certain extent overlap, inasmuch as catarrh may end in ulceration, and both conditions may exist side by side in the same specimen, yet is this distinction nevertheless useful, since they arise from different causes. The cause of the catarrhal form we do not certainly know, but it is clear that it is not dependent on the presence of faecal or other extraneous matter. The ulcerative form on the other hand is produced solely by the pressure of a faecal mass or a foreign body. Equally from both these forms may arise every grade of peritonitis; but the distinction between them may ultimately enable us to ascertain the condition of the appendix which underlies the so-called relapsing perityphlitis, and to extract some rule which shall guide us in the selection of cases suitable for its excision.

*(A). Catarrhal Appendicitis.*

A catarrhal inflammation of the appendix is certainly of very frequent occurrence, but its exact frequency cannot be determined, for in itself it produces no symptoms, and doubtless, like catarrhs of other mucous membranes, it may subside without leaving any trace.

A chronic catarrh is however very commonly found in general post-mortem work, and it is easily detected, for it gives rise to a recognisable thickening of the whole wall. In this condition the appendix is stiff, and on section tends to maintain its cylindrical shape.

Simple catarrh of the appendix is independent of the presence of faecal matter. In some of the specimens examined there was a little soft pasty faecal matter here and there mingled with mucus, but in most of them the lumen was quite

clear, and it is not to be supposed that the mere contact of faeces with the mucous membrane has any deleterious effect. Why the appendix is so liable to catarrh, especially in young males, is not clear, but the fact remains beyond doubt. It has been suggested (Bland Sutton) that the disproportionate amount of lymphatic tissue in the appendix, as compared with the rest of the alimentary canal, may be the cause of this instability, but such a view derives no support from microscopical examination.

The actual changes are those of inflammation of mucous membranes elsewhere. There is a rapid shedding of the epithelium of the general surface, the basement-membrane remaining for a time intact, detachment and extrusion of the epithelial lining of the crypts of Lieberkühn, infiltration with leucocytes of the delicate retiform tissue which forms the groundwork of the mucous membrane, and by the swelling thus produced, pressure upon and even obliteration of many of the crypts. The lumen is found to contain abundance of leucocytes, granular *débris*, mucus, and casts of the interior of the crypts, and the whole of this material is sometimes moulded into a definite central mass by the muscular movements of the tube (Plate I).

Perfect recovery by new growth of epithelium is at first possible, but the shedding may be so complete over so large an area, that the denuded surface cannot be covered anew. Thus arises the condition of chronic appendicitis. The inner part of the mucous membrane now comes to consist of granulation-tissue, in which the remains of a few of the once plentiful crypts may be distinguished.

This condition is probably a fertile source of perityphlitis, but it is fortunately in many cases the precursor of complete immunity from such attacks. If by the pressure of the surrounding parts the opposed granulating surfaces are brought into contact, and if the whole organ remains at rest, union takes place, and the appendix as a source of disease ceases to exist. The bearing of this on treatment is obvious. The commencement of this process of union is shown in Plate II.

In many cases however of chronic appendicitis, obliteration of the lumen is delayed, or rendered impossible by reason of the great thickening of the wall of the tube, which resists



apposition of the granulating surfaces. The muscular coats may often be seen to be infiltrated with leucocytes and connective-tissue cells, and in some cases there is great increase of the fibrous element of these coats, insomuch that the tube becomes rigid and incollapsible. The wall of one specimen was an eighth of an inch in thickness, being about double that of the healthy tube, and in another case the thickness of the muscular coat alone amounted to one tenth of an inch. In this incollapsibility probably lies the clue to some cases of relapsing perityphlitis.

Finally, the lumen may come to be occupied entirely by strong fibrous tissue springing directly from the submucous areolar tissue, and natural cure is then complete (Plate III).

It is not probable that catarrhal appendicitis can in itself give rise to symptoms; the patient only realises the existence of his appendix when its peritoneal investment is attacked. There is more than one mode in which the peritoneum may become inflamed.

(1) *Peritonitis by Extension of Inflammation from the Mucous Membrane.*

Inflammation may extend from the mucous membrane outwards through the wall of the tube, and may set up a peritonitis which is of very variable intensity. It may be slight, adhesive, and purely local, and may rapidly subside, as in the bulk of the cases seen in medical wards. It may never recur, if future protection is afforded by obliteration of the lumen. Among the 200 cases from which I am drawing, these mild attacks are frequently met with in patients who subsequently died from a more severe form. A good example is the case of H. N—, who in October, 1887, had a sudden attack of pain in the right iliac fossa with vomiting; he was better in twenty-four hours, and was well in a few days. Nine months later he died of general suppurative peritonitis due to rupture of a distended appendix (cf. p. 81), and there was found to be obliteration of the lumen for one third of an inch at the caecal end, so that the terminal part had become distended into a cyst by its own secretion.

If protection is not afforded by obliteration, the peritonitis

may be of the relapsing type, and obliteration is the less likely to occur, in proportion as the walls of the appendix are thick and unyielding. Such a chronic catarrh, with thickening of the wall, was probably the condition in the case of a young man, aged nineteen, under my care in 1890, who had had five attacks of perityphlitis in six months. Mr. Clutton explored the parts, but found the appendix so firmly adherent, in such an awkward position behind the cæcum, that its excision was not possible with safety. It was hard, swollen, and rigid. In many of the cases where the appendix has been excised for relapsing perityphlitis, it has been found in this condition. Osler describes two such cases.

In other cases the peritonitis may pass beyond the adhesive form, and proceed to the formation of pus. (In about 12 per cent., see statistics, p. 85.) The abscess thus formed is a local one, walled in by adherent intestines. If this condition is properly treated, recovery is as uniformly certain as in the mild adhesive form; and there appears to be a greater prospect of freedom from future attacks.

It is not improbable that this local suppuration around the appendix may be due to an invasion of the tissues of its wall by micro-organisms derived from the intestinal contents.

When the protective lining epithelium and the basement membrane of the tube have been destroyed, we have a raw unprotected surface exposed to faecal bacterial contamination. With this condition in full force, our wonder is that rapid inflammation of the wall, including the peritoneum, is not of more common occurrence. Doubtless the speedy closure of the tube by union of its opposed walls is an important conservative process; probably the formation of a layer of true granulation tissue on the inner surface of the mucous membrane is to some extent protective; and perhaps the ring of lymphatic tissue which usually separates the mucous from the submucous coat may act as a barrier. That micro-organisms can under similar conditions gain admission into the deeper parts of the intestinal wall is rendered probable by the occurrence of pylephlebitis and hepatic abscess, where the intestinal starting-point is often too small to be discovered by naked-eye inspection. In 1889 a man died in this hospital from hepatic abscess, for which the primary lesion appeared to be a gastric ulcer.

At any rate, it is important to recognise that this local suppuration may occur around an appendix, without any visible breach of continuity in its wall. No doubt in most cases this formation of a local intra-peritoneal abscess is the result, either of the same inflammatory necrosis which will be described as commonly setting up a general peritonitis, or of the ulceration due to the pressure of a foreign body; the abscess remains localised because the perforation takes place into a knot of adherent intestine. But perforation is not necessary for the production of an abscess, as Osler points out. He quotes the case of a man under the care of Fitz, who had had previous attacks of perityphlitis, then an abscess, then a recurrence, during which his appendix was removed. It was found to be thickened and adherent over a limited extent to the omentum, but not ulcerated or perforated.

Whether this local suppurative form of peritonitis is to be thus explained, is reasonable matter for doubt, but the rapid intense inflammation of the appendix wall, which is the common cause of the acute general peritonitis, is strongly suggestive of a bacterial origin.

A man may have this chronic catarrh of his appendix with a denuded internal surface, and be in perfect health. He may be seized however at any moment with sudden abdominal pain, rapidly develop all the signs of general peritonitis, and die in the course of three or four days. Such cases are common enough; they are described in post-mortem reports as being due to sloughing of the appendix. Microscopical examination shows in these cases a track of inflammation passing outwards from the mucous membrane to the peritoneum, an inflammation so intense that it leads to rapid death of the tissues of the appendix wall.

Usually this inflammatory necrosis of the wall of the appendix involves a considerable area of the peritoneal surface. Sometimes an inch or more of the tube undergoes this death in its whole circumference; sometimes the sloughing process encircles the tube, so that at the post-mortem examination it is found in two separate pieces, or it may be that the proximal part only can be found. In a remarkable case recorded by Stephen Paget ('Trans. Clin. Soc.,' 1892) the

whole appendix was thus detached and floated out in the pus on opening a perityphlitic abscess.

Though the lesion of the peritoneal coat of the appendix is thus usually a gross one in these cases of acute virulent peritonitis, it may be comparatively insignificant and may involve a very small area. The specimen shown in Plate IV, fig. 1 was taken from the body of a boy aged six, who died after an illness of four days' duration from general suppurative peritonitis. The appendix was excised before death and the abdomen washed out, but the operation was undertaken too late to be of any avail. It was two inches long, its wall was much thickened from chronic catarrh, obliteration had nowhere taken place, and the lumen was quite free from fæcal matter. There was a grey discolouration of the central half-inch of the tube for half its circumference, and this indicated the position and extent of the disease; but the actual visible lesion of the peritoneum was limited to two minute perforations, which would just admit an ordinary pin. The section has been taken just above one of these perforations, and it shows an acute inflammation of all the tissues between the lining epithelium and the peritoneum for half the circumference of the tube.

This specimen is important as showing how, even in the most acute and fatal cases of general peritonitis, the actual perforation of the peritoneal coat of the appendix may be extremely small. The appearance is also confirmatory of the idea that the explosion of inflammation of the appendix-wall is due to some agent that has penetrated the tissues of the wall from the interior of the tube, and that it is not a case of mere extension of inflammation by continuity of tissue from mucous surface to peritoneum. The glandular layer of the mucous membrane in fig. 1, though it shows inflammatory change sufficient to denude it of its protective epithelium, does not show the intense necrotic inflammation which is seen in the muscular coats. The inflammation seems to have started in the deeper lymphatic or subglandular layer, into which free hæmorrhage has occurred, and the brunt of the inflammation lies still further outwards, in fact, immediately under the peritoneum.

The appearance seen in Plate IV, fig. 2 seems to point to the same conclusion. This specimen was taken from a boy aged



ten, who died of acute suppurative peritonitis secondary to sloughing of the tip of the appendix. The mucous membrane was found to be diseased throughout. The section was taken near the cæcal end, about two inches therefore from the sloughing tip. Besides the chronic catarrh there were hæmorrhages in the deeper part of the lymphatic layer, with hæmorrhages and leucocytal infiltration of the submucous areolar tissue and of the muscular coats. The part shown in fig. 2 contains also a miliary abscess in the internal muscular coat, and two more in the external coat immediately under the peritoneum. These abscesses were not visible with the naked eye, and the peritoneum, although it is slightly bulged over them, did not differ in appearance from that of the rest of the tube.

The presence of such minute abscesses as these, situated just under the peritoneum, and seemingly on the verge of rupture, may possibly serve to throw light on some of the cases of general suppurative peritonitis for which no cause is found after careful post-mortem examination. Almost every year such cases are met with at this hospital, and they occur, so far as my experience goes, in children and young adults, at the age in fact which we know to be most liable to disease of the appendix.

A child died in this hospital in 1892 from general peritonitis. The abdomen was explored during life, and the appendix was examined and considered to be healthy. At the post-mortem no cause for the peritonitis was found. With the idea of a possible connection of such cases with disease of the appendix it was subsequently examined microscopically. It showed complete loss of the epithelial lining and partial destruction of the basement membrane, with inflammatory foci in the submucous areolar tissue and in both muscular coats, which, however, exhibited far less intensity of inflammation than appears in Plate IV, figs. 1 and 2.

Without laying too much stress on the evidences of inflammation in the muscular coats, which may have been secondary to the peritonitis, we have here a condition of the appendix, which, as we have seen before, is certainly capable of exciting a local intra-peritoneal suppuration, without any necessarily visible perforation of its peritoneal coat. If a

local suppuration may thus occur, there is nothing inherently improbable in the similar causation of a general peritonitis. At any rate, taking into consideration the appearances seen in Plate IV, this case is suggestive, and it is certainly worth while to examine the appendix in similar cases.<sup>1</sup>

(2) *Peritonitis following Distension of the Appendix.*

The second method by which peritonitis may ensue from catarrhal appendicitis is a more remote one. Obliteration of the lumen of the appendix by cohesion of its walls does not always extend through the whole length of the tube, and it is common to find a local impermeable stricture at some one point, which may be anywhere, but is generally near the cæcal end. The part beyond the stricture may become distended by secretion, and rupture of such a retention-cyst may occur, leading to a general peritonitis which is usually fatal.

It is possible also that similar distension, leading to a like result, may depend on a kinking of the tube at some point. There is a specimen in St. Thomas's Hospital Museum, which is probably of this nature, where the distension has been so forcible that there are five or six diverticula on the surface of the cyst.

In these cases a sudden strain or blow is commonly found to precede the rupture. The immediate cause of the peritonitis is sometimes a clean rent in the cyst-wall, often the result of violence. More commonly the inner surface of the wall is grossly ulcerated, and perforation occurs in the floor of one or more of these ulcers; or the final change may be a rapid gangrene of part of the wall, as in the case of catarrhal appendicitis previously described.

Instances of this are abundant. The case of H. N— has been already alluded to, as an example of slight catarrh, ending in partial obliteration. He was a clerk aged twenty, and had a slight attack of perityphlitis which kept him from work for a few days only. Nine months later he died from acute peritonitis, after four days' illness. His appendix was

<sup>1</sup> Poncet and Jaboulay, in the 'Rev. de Chir,' Nov., 1892, describe three cases of acute general infectious peritonitis, which they attribute to disease of the appendix without perforation of its wall.

2½ inches long; one-third of an inch at the cæcal end was a solid cord, and the terminal part, 2 inches long, was moderately distended into an oval cyst three-quarters of an inch in breadth. This cyst contained purulent fluid, its inner surface was uniformly ulcerated, and perforation had taken place in the floor of an ulcer close to the point of obliteration.

This peritonitis which results from this condition of the appendix is not always of the general fatal form. The distended appendix without perforation often sets up the mild local form which is followed by speedy recovery; and it stands on a level with the thickened appendix previously described as being the very root and cause of relapsing perityphlitis.

A good example was published by Bland Sutton in the 'Trans. Clin. Soc.,' 1891. The patient, aged twenty-two, had had four attacks of perityphlitis in three years, in the last of which the appendix was excised. It was 6 cm. long; for 2 cm. at the cæcal end it was soft and pliable like a normal appendix, the rest was as round and firm as a fat earth-worm, and at the junction of soft and hard parts was an oval swelling. The cæcal end was found to be completely strictured, and the part beyond the stricture was filled with pus. The walls were slightly thickened, and the mucous membrane was completely destroyed. A similar case, where however the obstruction was probably due to kinking, was recorded by Page in the 'Trans. Clin. Soc.,' 1892.

Another instance is the case of E. W—, aged 28, who had four severe attacks in eight months, during the first and last of which she was a patient in this hospital. In the last attack she died. The appendix was found to be strictured at a point one eighth of an inch from the cæcum; the rest of it, two inches in length, had been obviously distended; it was thickened and black, and showed a ragged ulcerated hole about its middle, the whole of the inner surface having a worm-eaten appearance. One can only regret that this appendix was not excised after the first attack.

### *(B) Ulcerative Appendicitis.*

Under this second head we have to deal with a primary local ulceration of the appendix, which is not preceded by a

general catarrh, and this ulceration is due to the presence of a fæcal concretion or a foreign body.

The relative frequency of the presence of a fæcal concretion and a foreign body was at one time grotesquely distorted. Foreign bodies are certainly found as the cause of an ulcerative perforating appendicitis, and they are sometimes found as the nucleus of a fæcal concretion; but in a vast majority of instances it is a mass of inspissated fæces which is the cause of the trouble.

The mere presence of fæces in the appendix can be seen microscopically over and over again to have no injurious effect on the epithelium. Ulceration does not occur until the fæcal mass comes to exercise a considerable degree of pressure upon the mucous membrane.

The hardness of the fæcal mass and its pressure against the wall of the appendix depend on the peristaltic contraction of the tube. The appendix is richly supplied with muscle, considering that it plays no part in forwarding the intestinal contents. It is not uncommon to find a mass of fæces which has been driven down into the blind end of the tube with such force that the tip assumes a bulbous appearance; on opening it and shelling out the mass, a fossa is seen, of which the floor will be found to be ulcerated. Two or three such masses may be found at different points, each one indicated by an annular dilatation of the unopened tube, which has thus a moniliform appearance. At each such point will be found ulceration. The barley-corn shape of these masses, with their thick substantial middle and tapering ends, indicates the action of waves of peristaltic contraction running up to the mass from both directions.

If the mass remains long in its bed it cannot be removed, except by its breaking up, and possibly this happens. It often becomes infiltrated with lime-salts, growing in size and hardness, and its destructive effect on the mucous membrane is thereby greatly intensified; but a fæcal mass may ulcerate through the entire wall, and be extruded into the peritoneal cavity, while still purely fæcal and still in a plastic condition.

As the fæces begin to exercise pressure on the wall, the first effect is a disturbance of the lining epithelium. This is shown



in Plate V, fig. 1, where three faecal particles are seen to have been driven through the basement membrane into the retiform tissue. The section is taken at the level of the tapering end of an oat-shaped concretion.

As the process continues, the epithelium is completely destroyed; and by the progressive interference with the blood-supply, the mucous membrane, the submucous tissue, and finally the muscular coats disappear before the advancing pressure. In Fig. 2, which shows the great pressure exercised by a large concretion (only part of which is here represented), the mucous membrane is much thinned, and to the right of the section it has been completely destroyed.

*Peritonitis arising from Ulceration of the Appendix.*

It is difficult to say at what stage in this process symptoms of involvement of the peritoneum may first appear. It is probable that, as in the case of catarrhal appendicitis, local peritonitis may be set up at any moment after the destruction of the epithelium. But microscopical examination shows that the peritoneal coat of the appendix is far more tolerant of the distending process than might have been supposed. It is not uncommon to meet with an appendix distended by a faecal concretion, so that its wall consists only of thinned-out muscular tissue, and yet the peritoneum may show no sign of past or present inflammation.

At any rate it is probable that mild attacks of perityphlitis do centre round such a condition as this, and it is certain that both local suppuration and acute general peritonitis are often the result of it. In these two last cases the concretion is sometimes found free in the peritoneal cavity, while a ragged rent in the appendix indicates its mode of exit; or the rent is found in the appendix, with the concretion still firmly held in its original bed.

STATISTICS.

In 200 cases occurring in this hospital, where the peritoneum, as a whole or in part, was inflamed as the result of primary disease of the appendix, the relative figures are as follows:

(A) *General peritonitis*.—There were 22 cases, of whom 20 died and 2 recovered. Of these 20 fatal cases the actual cause in 7, was the process described as acute inflammatory necrosis, in 2, the rupture of a distended tube, and in 11, the presence of a faecal concretion. In no case was a foreign body found.

(B) *Local peritonitis or perityphlitis*.—(a) With suppuration there were 24 cases (12 per cent.). Of these 2 died and 22 recovered. One patient died from a secondary hepatic abscess, the other from the effects of a miscarriage. The abscess was opened in all the cases; in only 2 was a concretion found in the pus. (b) Without suppuration there were 154 cases, of whom only one died, no cause for death apart from the local peritonitis being found.







## DESCRIPTION OF PLATE I,

Illustrating Dr. Herbert P. Hawkins's paper on "The Pathology of Perityphlitis."

### Catarrhal Appendicitis.

Transverse section of an appendix which was bound down by adhesions along the inner border of the cæcum. Part only of the thickness of the wall is here shown.

The general epithelial lining has been almost entirely shed, only a few degenerated cells and granular débris remaining. The basement membrane is for the most part intact.

The central mass lying in the lumen is composed of granular material, leucocytes, and epithelial cells, with a few dark granules of fæcal matter. In it are many complete epithelial casts of the tubular crypts of Lieberkühn.

The crypts have been largely obliterated and the epithelium of the surviving crypts is degenerated.

*a.* Epithelial cast embedded in the central mass.

*b.* Empty socket of a crypt.

*c.* Submucous areolar tissue.

PLATE I.



× 40.







## DESCRIPTION OF PLATE II,

Illustrating Dr. Herbert P. Hawkins's paper on "The Pathology of Perityphlitis."

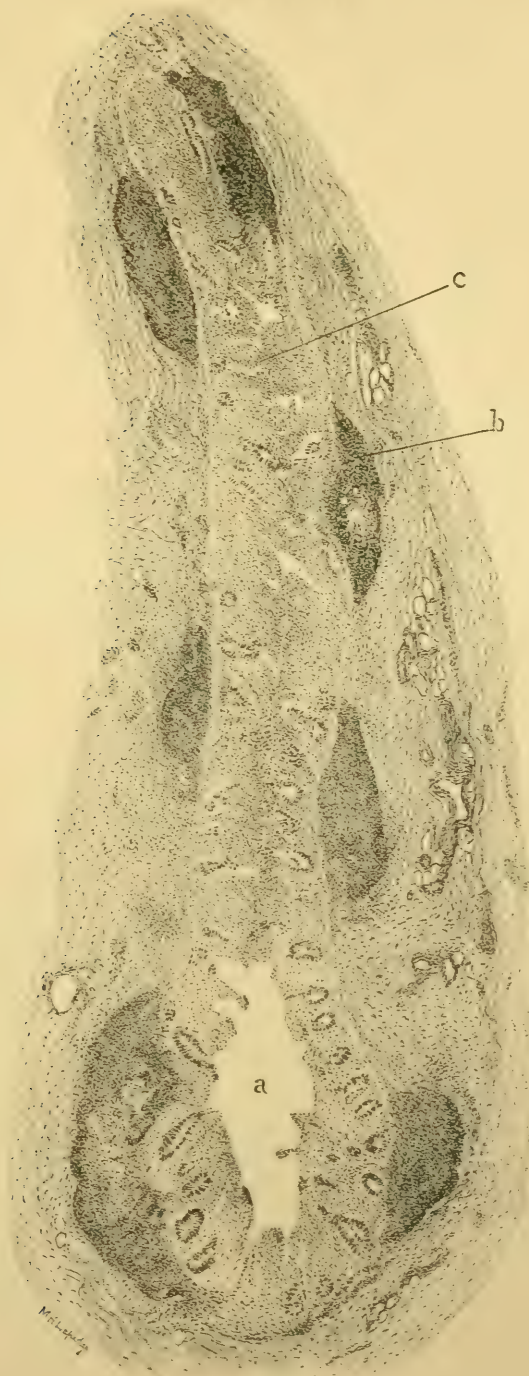
Commencing Obliteration of Appendix.

Transverse section of an appendix near the base, showing the commencement of union between opposed granulating surfaces. Only part of the thickness of the wall is shown.

The general epithelial lining and the basement membrane have been destroyed. The epithelium of the crypts has been largely shed, especially at the upper end of the figure, where union is most advanced.

- a.* Remains of the lumen of the tube.
- b.* One of seven nodules of lymphoid tissue.
- c.* Point where union is complete.

PLATE II.



× 40.







## DESCRIPTION OF PLATE III,

Illustrating Dr. Herbert P. Hawkins's paper on "The Pathology of Perityphlitis."

### Complete Obliteration of Appendix.

Transverse section of an appendix which was firmly adherent to the psoas and to the omentum. The appendix was a solid cord from end to end without any trace of epithelium or mucous membrane.

The whole thickness of the wall is shown only in the lower right quadrant of the figure.

The lumen is occupied by fibrous tissue.

*a.* Remains of submucous areolar tissue.

*b.* Internal muscular coat.

*c.* External muscular coat.

PLATE III.









## DESCRIPTION OF PLATE IV,

### Illustrating Dr. Herbert P. Hawkins's paper on "The Pathology of Perityphlitis."

FIG. 1.—Transverse section of an appendix, taken 1 mm. above a minute perforation which set up a fatal general peritonitis.

In the lower half of this figure the appendix-wall is nearly free from disease; in the upper half all the tissues between peritoneum and mucous membrane are acutely inflamed.

The glandular layer of the mucous membrane (*a*) of the upper half has been pushed down across the lumen into contact with the opposite surface by the pressure of an acute inflammation, which has arisen outside it, apparently in the deeper or lymphatic layer of the mucous membrane.

The general epithelial lining has been shed and the basement-membrane in part destroyed; but the changes in the glandular layer of the mucous membrane are quite out of proportion to the intense inflammation of the submucous and muscular coats.

*a.* Glandular layer of mucous membrane pressed down into contact with the opposite surface so that the lumen is obliterated.

*b.* Blood-clot in lymphatic layer of mucous membrane.

*c.* Mass of inflammatory exudation.

*d.* Necrosed muscular coats.

*e.* Point at which a pinhole perforation occurred 1 mm. below the level of this section.

FIG. 2.—Transverse section of part of the wall near the cæcal end of an appendix, the tip of which had sloughed, setting up a fatal general peritonitis.

It shows chronic inflammation of the mucous membrane; there is no trace of epithelium or basement membrane. There is an elongated collection of leucocytes around a distended vessel in the internal muscular coat, and two abscesses in the external muscular coat which have produced a bulging of the peritoneum over them.

*a.* Abscesses in external muscular coat.

*b.* Distended vessel.

*c.* Lymphatic tissue.

*d.* Remains of a crypt embedded in granulation tissue.

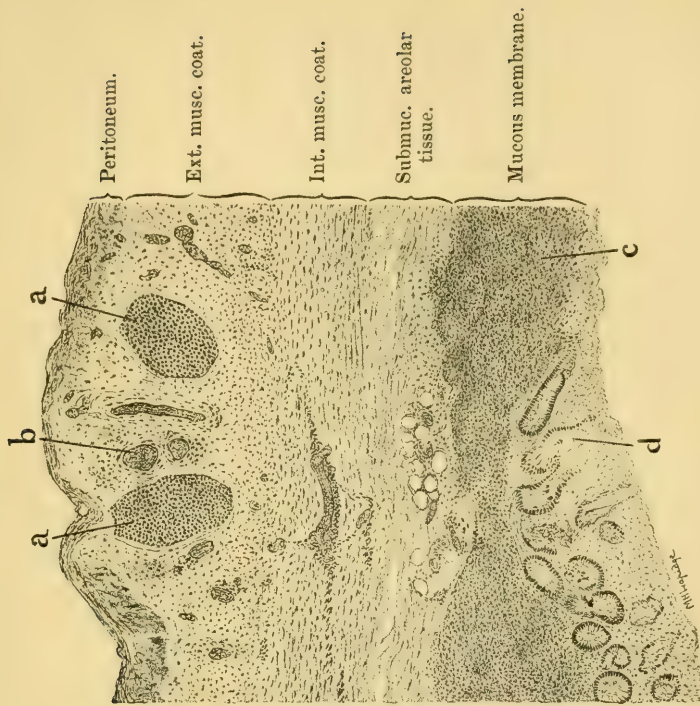
# PLATE IV.

FIG. 1.



× 25.

FIG. 2.



× 40.







## DESCRIPTION OF PLATE V,

Illustrating Dr. Herbert P. Hawkins's paper on "The Pathology of Perityphlitis."

FIG. 1.—Transverse section of the mucous membrane of an appendix just below a firmly fixed fæcal concretion.

The epithelial lining and the basement-membrane are healthy and intact, except in the centre, where three fæcal particles are seen to have been driven through them.

*a.* Fæcal particles.

FIG. 2.—Transverse section of part of the wall of the same appendix, taken at a point where the pressure of a fæcal concretion was very great. There was another similar concretion a little lower down in this case, and this had ruptured the coats, setting up a localised suppuration around it. The abscess was opened, the appendix removed, and the patient made a good recovery.

Only a small part of the concretion is shown here. The epithelial lining has been destroyed, and to the right of the figure the mucous membrane has completely disappeared; the concretion resting on the submucous tissue.

*a.* Indriven fæcal particle at the periphery of the concretion.

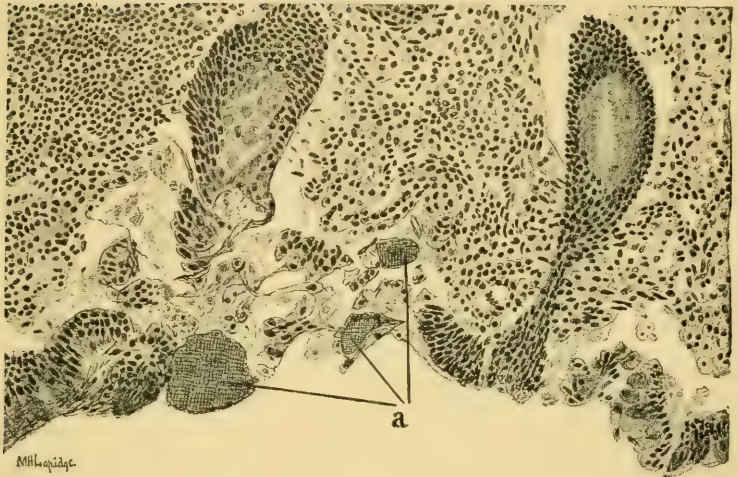
*b.* Condensed submucous areolar tissue.

*c.* Internal muscular coat.

*d.* External muscular coat.

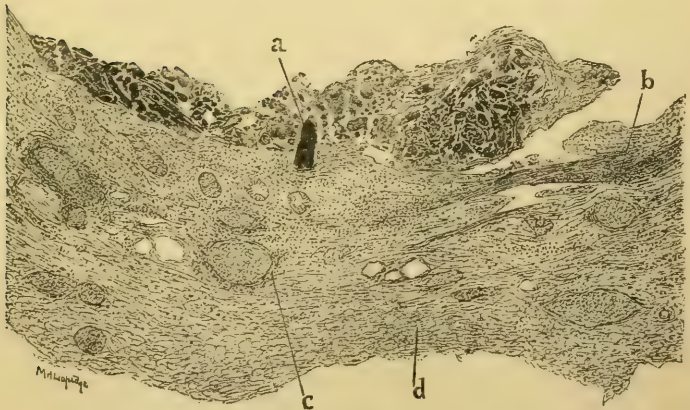
PLATE V.

FIG. 1.



× 180.

FIG. 2.



× 40.



# ON DIPHTHERITIC PARALYSIS

AND THE

## NERVOUS SYMPTOMS AND SEQUELÆ OF DIPHTHERIA.

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By HECTOR W. G. MACKENZIE, M.A., M.D., F.R.C.P.

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IN the last volume of these Reports I gave an account of observations on albuminuria and on the condition of the knee-jerks during and after diphtheria. In regard to albuminuria I illustrated the great frequency of its occurrence, especially towards the end of the second week of the disease. I attempted to estimate its importance as a prognostic sign, showing that the presence of much albumen in the urine generally meant intensity of the disease, and the earlier it set in the greater cause there was for anxiety. I pointed out that although in many cases albuminuria did not persist for more than a few weeks, if so long, in some it continued much longer; that very frequently it was intermittent, and apt to reappear with the onset of paralysis. I quoted a case at some length in which albuminuria was of late occurrence, of long duration, and of a cyclical character. In regard to the knee-jerks, I gave tables showing their condition in a large number of cases at different stages of the disease. I showed that in a large number of non-fatal

cases the knee-jerks disappeared, that the most usual time for their disappearance was from the fourth to the tenth week, and that the time for which they remained absent was very variable, and might be anything from two weeks to seven or eight months. I showed, too, that in many of the early fatal cases the knee-jerks disappeared, and that their absence was accompanied by other symptoms of affection of the nervous system. I appended accounts of a number of cases, both fatal and non-fatal, which illustrated the condition of the knee-jerks at different stages.

I propose, in the present communication, to consider the other nervous symptoms of the disease generally comprised under the term diphtheritic paralysis.

The total number of cases on which the following details are founded is 955, of which 452 were fatal. The period during which these cases were admitted to the hospital extends over eight and a half years, from the middle of 1884 to the end of 1892. Many of the fatal cases were only a very short time under observation, admitted as they were for immediate tracheotomy, which they did not long survive. A considerable number of the non-fatal cases, moreover, were only seen for a week or two. When this is taken into account, the particulars I am about to give become more significant. It is because I have kept a good many cases under observation for some months after leaving the hospital, and have been careful to observe symptoms of nervous disorder as they occurred, that I am able to bring forward such a large number of cases. I feel sure that if I had been able to follow up all the cases, there would have been comparatively few in which some symptoms of affection of the nervous system were not found. Taking all the cases into account, it will be seen that paralysis occurred in nearly 20 per cent.

It may be interesting to compare the results I have obtained with those given by Cadet de Grassicourt, founded on about the same number of cases. In 937 cases of diphtheria, where observations were made with the greatest care, he found 128 cases of paralysis, including slight as well as severe forms. Out of these 937 cases 497 were fatal tracheotomy cases. His figures, he says, are below the



truth, because a very great number were not followed up, and many died before the advent of paralysis. I must differ from him in one remark he makes, that in London the frequency with which paralysis succeeds to diphtheria is not comparable to that which exists in Paris. It will be seen that paralysis has been commoner in my series of cases than in his. This I attribute not to any difference in the symptoms or sequelæ of the disease in the two cities, but simply to what I have already mentioned, that I watched many of the cases for a long period, and that I carefully observed the onset of paralytic symptoms in the fatal cases.

In a very interesting memoir on peripheral neuritis by the late Dr. Ross of Manchester, published in the '*Medical Chronicle*' for 1890, he quotes the opinion of Dr. Bowman that about three out of every four children attacked by diphtheria suffer from paralysis in some degree, and that there are only rare instances in adults where some form of paralysis, however transient, does not manifest itself.

The idea which one gathers from the accounts of diphtheria in most of the text-books is that paralytic symptoms only arise at a period more or less remote from the membranous stage, and that they are purely sequelæ. Maingault, in his classical account of diphtheritic paralysis, says the first signs almost always develop two or three weeks after all morbid phenomena in connection with the throat have ceased. Morell Mackenzie says, "The advent of the various local paralyses is always gradual, and, as a rule, they declare themselves during the second and third week after the complete healing of the local lesion. Trousseau, however," he adds, as if it were something very unusual, "quotes a case in which they became manifest three days before the disappearance of the false membrane." According to Hilton Fagge, "the so-called diphtheritic paralyses commonly begin during the second or third week after the subsidence of the throat affection, but they are said to be sometimes postponed until the lapse of a month or six weeks."

Now it will be seen from the review of the symptoms I am about to give that paralysis quite frequently sets in while the disease is still in the membranous stage. In the

malignant type of the disease, indeed, this is the rule, paralysis setting in especially early. A large proportion of cases with early paralytic symptoms are fatal ones. The same holds as regards the early loss of the knee-jerk, which is generally associated with paralytic symptoms.

No one will deny that in many cases which come under treatment for paralysis the classical description is perfectly applicable, the reason being that in so many of the cases where paralysis develops early, a fatal issue occurs. Where the paralysis appears early, its occurrence is not nearly so striking and is very likely to pass unnoticed, because attention is apt to be concentrated on the local membranous lesion.

I have again to express my indebtedness to the physicians of the hospital for permission to publish both these observations and the cases which follow.

#### I. PARALYSIS CONNECTED WITH THE PALATE AND THE PROCESSES OF DEGLUTITION.

Under this heading I have grouped together two main conditions.

(1) Paralysis of the soft palate as shown by regurgitation to the nose on swallowing, and by the nasal character of the voice.

(2) Anæsthesia and paresis of the depressors of the epiglottis causing failure of the larynx to close on swallowing, shown by the entrance of liquid into the trachea, its exit by the tube in cases of tracheotomy, and the coughing efforts to get rid of it through the larynx.

Of the two, paralysis of the palate is much the better known, probably because it is more obvious. The second is, however, very nearly as frequent and quite as important. Often the two conditions exist together. Dr. Ross, in the memoir I have already referred to, quotes an ingenious demonstration by Dr. Bowman of the anæsthesia of the larynx and upper part of the trachea. In cases where liquid entered the trachea freely and excited coughing, he found that by plugging the trachea just above the tracheotomy wound he was able to stop the cough, although, of course, the fluid

must still have entered the larynx and upper part of the trachea.

This form of laryngeal paralysis has an important bearing in practice. It is very undesirable that if it can be prevented food should be allowed to pass into the trachea and bronchi. Broncho-pneumonia is not infrequently set up in this way. To prevent this result, liquids may be given by the soft œsophageal tube which may be passed by the nose, or milk may be given, as has been done in our wards, thickened with isinglass to form a jelly. The entrance of water into the trachea cannot be so hurtful as that of milk or beef tea.

Paralysis affecting the mechanism of deglutition occurred in 178 cases, 77 of which were fatal. The time at which it first occurred in different cases is shown by the following table :

Period of disease.									
		Days		Days		Days		3rd	Later.
		1-7.		8-11.		12-14.		week.	
Fatal	. . .	33	...	19	...	10	...	11	4
Non-fatal	. . .	7	...	15	...	15	...	30	34
Total	. . .	40	...	34	...	25	...	41	38

From this it will be seen that a greater number were observed in the second week than at any other period.

The table shows very strikingly the large proportion of deaths when paralysis of this kind appears early, over 80 per cent. of the cases where it showed itself in the first week being fatal. The proportion of fatal to non-fatal cases decreases rapidly with the length of the interval before paralysis sets in. Out of the 178 cases, in 123 there was regurgitation to the nose, and in 98 entrance of fluids into the trachea, so that in 43 cases the two symptoms occurred together.

The latest time at which I have observed paralysis of the palate to set in is the tenth week. The duration of these forms of paralysis is very variable, sometimes only lasting a few days, sometimes continuing for some weeks, and sometimes recurring after temporary cessation.

In eight of the non-fatal cases paresis of the pharyngeal muscles was observed about the fifth or sixth week. In

these cases after food had reached the pharynx there was difficulty in passing it on into the œsophagus. It seemed to stick there, and the patient had sometimes to push it down with his fingers.

## II. PARALYSIS OF THE OCULAR MUSCLES.

Paralysis of accommodation was observed in thirty-six cases. This number may appear small out of such a large total number of cases. Considering, however, the large number of early fatal cases, and of cases which were not followed up, or where the children were too young to test for accommodation, we shall find that it really represents a fairly high percentage. I never observed this form of paralysis before the third week; and as the majority of cases were seen up to that time, it cannot be at all a common occurrence at that stage of the disease. The following tables show the times of its first occurrence and duration.

												Time of first occurrence.															
												Days 15—18.		Days 19—21.		4th week.		5th week.		6th week.		7th week.		8th week.		Indeter- minate.	
No. of cases		...	4	...	5	...	8	...	8	...	5	...	1	...	4	...	1										

										Duration.								
										Days	Weeks		Weeks		Weeks		Weeks	
										7-14.	2-3.		3-4.		4-5.		5-6.	
No. of cases	...	13	...	7	...	7	...	4	...	2								

With few exceptions these were non-fatal cases. It is impossible to investigate the condition of the accommodation in a patient seriously ill, and this reason alone is sufficient to exclude all the early fatal cases. I may, however, mention that in one or two of the latter cases I was informed by the nurse that for a short time before death the patient appeared to be blind, although quite conscious.

Double vision or convergent squint, due to weakness of one or both external recti, occurred in fifteen cases. In six of these it accompanied the paralysis of accommodation, but in the others it occurred independently. It occurred like the cycloplegia, between the third and eighth weeks, and usually lasted about fourteen days. It was nearly always slight in degree.



### III. SENSORY PHENOMENA.

Under this heading I include such abnormal sensations as tingling, numbness, anæsthesia, "pins and needles," and pains of various kinds.

Children, especially the younger among them, are not very likely to complain of any other sensations than pain, and it is practically useless to make inquiries of them for such troubles as tingling or numbness, or to test them for anæsthesia.

The number of cases in which such phenomena were found is therefore small.

Tingling and numbness were observed in twenty-one cases. These sensations were generally referred to the hands and feet. The time of onset is shown in the following table :

Time of appearance.												
	2nd week.	3rd week.	4th week.	5th week.	6th week.	7th week.	8th week.	9th week.	Undeter- mined.			
No. of cases	1	3	2	2	4	2	3	1	3			

These symptoms lasted for periods varying from a fortnight to five or six weeks.

Pains, for the most part limited to the calves, were complained of in fourteen cases. They troubled the patient for a week or a fortnight, and occurred between the third and twelfth week, although most frequently about the seventh or eighth week. As I have already mentioned, anæsthesia of the palate and larynx was frequently found at the time when palate paralysis was present. Other forms of anæsthesia I have not very often noticed.

### IV. PARALYSIS OF THE EXTREMITIES.

This, to a greater or less degree, was observed in forty-two cases. Here, again, one is unable to say, at any rate as regards the lower extremities, how often and to what extent loss of power occurred in the early fatal cases, and in such cases as were kept rigidly in bed. Paralysis was very much commoner in the lower than in the upper extremities, and was seldom if ever com-



plete. As I mentioned when discussing the knee-jerks, paresis of the legs is generally accompanied and preceded by loss of knee-jerks. In no case where the legs became affected did the knee-jerks remain, although in a few cases the delay in their disappearance made one think for a time the cases would prove exceptional. The loss of power made its appearance, as a rule, about the fifth, sixth, or seventh week. The earliest time at which it came on was the second, and the latest the sixteenth week, as shown in the annexed table.

Week of onset.													
	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.	11th.	12th.	13th.	16th.
No. of cases ...	1 ...	3 ...	3 ...	7 ...	5 ...	6 ...	4 ...	2 ...	4 ...	1 ...	2 ...	1 ...	1

It lasted from a fortnight to eight or nine weeks.

V. Such symptoms as staggering, stumbling, giving way of the legs, &c., were noted in thirty-three cases. Sometimes the staggering was so great as to suggest the existence of cerebellar disease. I have seen at least one case, which from its subsequent history I have no doubt was one of diphtheritic paralysis, at first diagnosed as cerebellar tumour. It was no uncommon story to hear from the parents that the children, about the sixth or eighth week, became "tottery" on their legs, that they frequently fell, and in consequence bruised themselves. This occurred in many cases in which no actual loss of power was manifest. Sometimes it preceded the latter. The knee-jerks generally disappeared in such cases at a later period. As a rule, this inco-ordination trouble only lasted a few weeks. The time of its first occurrence and the number of cases are given in the following table:

Time of onset.												
	4th week.	5th week.	6th week.	7th week.	8th week.	9th week.	10th week.	11th week.	12th week.	13th week.		
No. of cases ...	2 ...	5 ...	5 ...	5 ...	5 ...	4 ...	1 ...	3 ...	1 ...	1		

VI. Other forms of paralysis were observed in a few instances. Thus in three or four cases there was very obvious weakness of the muscles of the neck, shown by falling forward of the head.

I have seen paralysis of the intercostal muscles in only one case, and that a fatal one.

Paralysis of the diaphragm was observed in five cases, two of which were fatal. It occurred in these cases between the seventh and tenth weeks.

In two cases facial paresis was noticed, and in one case weakness of one half of the tongue.

## VII. INCONTINENCE OF URINE.

In twenty cases transitory incontinence of urine was observed. As a rule it lasted only a few days, although in two instances it existed for three weeks. It occurred in five cases during the second week, in three during the third, in five during the fourth, in three during the fifth, in one in the seventh, in two in the ninth, in one in the eleventh, and in one after six months. In many of the early fatal cases it was noted that the children had a frequent desire to micturate, and were unable to hold the urine long after the desire.

## VIII. LARYNGEAL PARALYSIS.

The commonest form of this I have already alluded to in connection with deglutition, namely, the involvement of the superior laryngeal nerve producing anæsthesia and paresis of the depressors of the epiglottis, and so allowing the entrance of liquids into the trachea on swallowing. This affection, I pointed out, was nearly as common as paralysis of the soft palate.

In a few cases there have been symptoms pointing to paralysis of the external tensors (crico-thyroid muscles), causing a very marked gruffness of the voice, persisting for some weeks, in one case for several months. In others aphonia has been observed, lasting similarly a considerable period after recovery from the local laryngeal affection.

Cases have also been met with in which there have been symptoms pointing to involvement of the abductors, marked stridor during sleep and on exertion, and total inability to

dispense with the tracheotomy tube for a long time after the membranous stage.

#### IX. CARDIAC AND GASTRIC CRISES.

Symptoms of the nature of cardiac and gastric crises occurred in a large number of cases. The patients were attacked with vomiting accompanied by nausea, sometimes by abdominal pain, sometimes by diarrhœa, or by a tendency to syncope, pallor of the face, feeble and rapid pulse. Attacks of vomiting were noted in seventy-two cases, excluding, of course, vomiting at the onset of the disease. Of thirty-six cases in which vomiting occurred in the first week, thirty-four died ; of thirty-five in which it occurred in the second week, thirty-one died ; of twelve in which it occurred in the third, seven died ; of twelve in the fourth, two died ; and of sixteen later, six died.

The cases in which it occurred in the first and second weeks were of a very malignant type, as may be seen from the very large proportion of deaths. Its early occurrence is, therefore, just cause for alarm. Even at a later period it is a distinctly unfavorable sign. In such cases death usually occurred from cardiac failure. Syncopic attacks sometimes, but much more seldom, were met with without vomiting. This fact has an important practical bearing. Such cases should be closely watched. The patient should not be allowed to sit up. Stimulants should be kept in readiness, to be given if there are any signs of heart failure.

Such symptoms receive little notice in accounts of diphtheria by English writers, but a good deal has been written on the subject by French observers.

Thus Suss, in the '*Revue des maladies de l'enfance*' for 1887 sums up the features of diphtheritic paralysis of the pneumogastric as follows :—(1) Slowing followed by quickening and feebleness of pulse ; (2) sometimes dyspnœa ; (3) very violent gastro-intestinal pains, almost always vomiting ; (4) nearly always death in twenty-four hours.

Cadet de Gassicourt considers that 15 per cent. of cases of diphtheritic paralysis get these symptoms. In his expe-

rience violent abdominal pains and vomiting show themselves first. The pains are almost constant, and make the prognosis nearly always unfavorable. Sometimes they are excruciating, radiating from the epigastrium towards the liver.

In most cases there was no diarrhoea, although in several there was frequent desire to go to stool, and sometimes very fetid stools were passed. Pulmonary signs were sometimes completely absent, and dyspnoea was variable. Rapid respiration was not uncommon. Restlessness was extreme. There was generally complete refusal of food. Fever as a rule was absent.

#### X. CASES (2nd series).

The cases I published in the communication already referred to, although chosen specially to illustrate the course of the knee-jerks, are no less appropriate in connection with the present subject. I have selected out of the large number available fourteen additional cases to supplement the others, and I have numbered them in continuation of the first series.

Cases 12 and 13, like Cases 1, 2, 3, 4 and 6, illustrate the ordinary type of diphtheritic paralysis.

Case 14 I give on account of the long continuance of the difficulties connected with deglutition.

Case 15 illustrates the occasional absence of paralysis of the palate.

Case 16 is an example of the affection of the external recti and of the neck muscles.

In Case 17 the early onset of troubles of deglutition is interesting.

In Case 18 a cardio-gastric crisis preceded any signs of paralysis.

Case 19 is worthy of note on account of the numerous cardio-gastric attacks, of the paralysis of the diaphragm, and of the ultimate recovery.

Case 20 is the case I referred to under the fifth heading, where there was no actual history of diphtheria, and where the symptoms suggested cerebellar disease.



Case 21 is an instance of the marked alteration of the voice which is sometimes left by diphtheria.

Case 22 is interesting because of the complication of chorea with diphtheria and paralysis.

Cases 23 and 24 are worth comparing with Cases 7, 8, 9, 10, and 11, as showing the similarity of the mode of death from diphtheritic paralysis at a later to that at an earlier period.

Case 25 is an instance of more or less complete paralysis.

CASE 12. *Diphtheria ; paralysis of accommodation ; coughing on swallowing ; regurgitation ; paræsthesia ; paresis of lower extremities ; loss of knee-jerks ; no albumen.*—E. C—, girl æt. 14, admitted May 17th, discharged June 5th, 1889. She was taken ill about the middle of March with sore throat, which was bad for a fortnight. Swallowing was painful, and there was a thick discharge from the nose. No doctor attended her, but her mother looked at the throat and saw “white ulcers” on each side of it. Her sister also was taken ill with sore throat.

When the throat got well, quite suddenly the sight became dim, and she was unable to see either to read or to work. She was taken to the Westminster Ophthalmic Hospital for this dimness of sight, which lasted about a month. She had no double vision at any time.

About the same time as the dimness of vision came on coughing used to be excited by swallowing, fluids regurgitated to the nose, and she spoke as through her nose. This lasted about a fortnight.

She had numbness in the tips of the fingers of the right hand for three or four days about the middle of April. Towards the end of April she had “pins and needles” in the feet and numbness down the back of the legs and underneath the toes, and this lasted until the time she was admitted to the hospital. Her legs seemed stiff and her feet heavy.

When admitted to the hospital her complaint was of weakness of the legs. She was anæmic. Power in both legs was much below the normal. The knee-jerks were absent, plantar reflexes present but sluggish. The arms were weak, although not so markedly so as the legs. No



anæsthesia. No affection of deglutition. Accommodation good. Urine, no albumen.

*Progress.*—While in the hospital the patient presented no fresh symptoms. The weakness in the legs at first increased and then diminished, so that while a few days after coming into the hospital she was unable to stand unsupported, when she left the hospital on the 5th June she was able to walk without help.

CASE 13. *Diphtheria; tracheotomy; coughing on swallowing; paralysis of accommodation; knee-jerks disappearing at end of sixth week; recovery.*—L. P—, female æt. 5, admitted April 29th, discharged June 6th, 1889.

She was taken ill a few days before admission; breathing became bad on April 28th.

*On admission.*—Suffering from dyspnœa, some retraction of ribs. Membrane on both tonsils. Glands enlarged. Tracheotomy at once performed.

*Progress.*—Child was immediately relieved by the operation and progressed favorably. Much membrane was coughed up through the wound during the first few days. On May 18th I noted, "There has been a little coughing on drinking all along, but on the 12th it became more marked, and has continued so. To-day she coughs almost as soon as she commences to drink." On May 21st, "Swallows better, but still occasional coughing." The accommodation was repeatedly tried by means of thread and needle. On May 14th she threaded the needle with ease, but on May 28th I noted, "Quite unsuccessful in her attempts to thread a needle. Could not distinguish between the eye end and the point. Tried to thread the sharp end." The knee-jerks were brisk from the commencement until June 3rd, when no response was obtained in one leg, and only a feeble one in the other.

June 28th.—Accommodates well. Knee-jerk absent in right, doubtful in left. Mother says she has been very well in every way since she was in the hospital.

August 3rd.—Knee-jerks not obtained.

September 17th.—Knee-jerks returned fairly brisk; now quite well.

CASE 14. *Diphtheria* ; long continuance of regurgitation to the nose, and coughing on swallowing.—W. W—, male æt. one year and eight months, admitted March 25th, 1889, discharged April 24th.

Measles, October, 1888. Taken ill with croupy cough five days before admission.

*On admission.*—Emaciated and pale. A few patches of membrane on both tonsils. Glands enlarged. Knee-jerks not obtained.

*Progress.*—April 6th.—Regurgitation to nose, and a good deal of coughing on swallowing. 13th.—Occasional regurgitation of fluids to nose. 18th.—Knee-jerks present ; no regurgitation. No other signs of paralysis.

About the middle of May difficulty in swallowing returned.

On June 28th I noted, “Coughing and choking on swallowing occasionally now. Knee-jerks present. Very well in other respects.”

August 10th, seen again. Mother, when asked how he was, said at once, “He seems so weak in right knee ; when he walks it goes under him and he can’t save himself from falling. This happens very frequently.” She said she forgot to mention it the last time he was here, but it had lasted for two months or so. There is still coughing on drinking and regurgitation from nose at times. Profuse perspirations about head at night. Both knee-jerks present.

September 17th.—Knee-jerks brisk. Still said to be weak on legs and troubled with cough on swallowing. Still profuse perspirations.

CASE 15. *Diphtheritic paralysis without the palate being involved.*—G. R—, æt. 16, admitted under Dr. Payne, August 4th, 1888. Two months previously throat sore for one week.

About a week after the sore throat he found he could not see to read. Everything became dim after looking at a book for a few seconds. This lasted about ten days.

Next, numbness in the feet came on after jumping in water. The numbness and coldness became gradually worse in the feet, and the fingers became affected.

On admission he was unable to stand without assistance.

Knee-jerks absent on both sides. Grasp of right hand weaker than the left; considerable loss of power in flexor muscles of legs.

*Progress.*—Knee-jerks still absent when discharged, September 8th. He then walked fairly well, but did not raise the feet well. No albuminuria.

CASE 16. *Diphtheria; paralysis of external recti; paresis of neck muscles and of lower extremities.*—W. G—, boy æt. 4½, admitted under Dr. Ord, June 30th, 1887, discharged August 23rd.

Six weeks previously he had a sore throat and was very ill for fourteen days. A fortnight before admission the mother first noticed the child hung his head down. A few days later he began to stagger in walking, and he had not walked since.

*Condition on admission.*—Well nourished. Head could only be moved from side to side and slightly up and down. It tended to fall forward when the boy sat up, and when pushed back it was with difficulty brought forward again.

*Eyes.*—Paralysis of external rectus on both sides, but more marked on left. Pupils act to light and accommodation. Fundi normal.

Intercostal spaces only slightly raised during inspiration. Diaphragm acted well.

No return of fluids through nose, but occasional choking on swallowing. Speech thick, nasal, and indistinct. Anæsthesia of soft palate.

Legs weak; gait slow and cautious; feet turned outwards, lifted off the ground but little, and brought down flat. Child inclined to lean on something for support.

Knee-jerks absent. Plantar reflexes brisk. No loss of control over evacuations. Urine, no albumen.

*Progress.*—The squint was hardly noticeable by July 11th, and had disappeared by August 1st. The swallowing also improved. The legs became weaker for a time. The knee-jerks were still absent when the patient left the hospital.

CASE 17. *Diphtheria; early paralysis of palate and of accommodation; incontinence of urine.*—Lily L—, æt. 7, was

taken ill on July 1st, 1889, with sore throat, having previously been out of sorts for a day or two.

Next day she was admitted to the hospital with dyspnœa and a croupous cough. There was membrane to be seen on the tonsils and uvula. The knee-jerks were present. Slight albuminuria.

By July 7th the membrane had disappeared, and the child was better in every way.

On the 6th, when taking her milk, she choked, and some of it came out from the nose, and this had previously happened once before. She had no repetition of this difficulty, but later her voice became slightly nasal.

On the 9th and 10th she had incontinence of urine.

On the 17th it was found that she had failure of accommodation; while previously she had threaded a needle easily, she was now unable to do it, and she could only just tell the letters of the larger sized print.

The affection of accommodation increased and continued until August 28th, lasting therefore for six weeks.

The knee-jerks were quite brisk when she was seen on the 24th and 31st of July, but on the 7th of August they were found to be absent, and were still absent on September 18th.

She was troubled with night sweats during August.

CASE 18. *Diphtheria; cardio-gastric attack; paralysis of accommodation; aphonia.*—C. K—, girl æt. 10, admitted under Dr. Harley for diphtheria November 3rd, 1884, discharged January 13th, 1885.

Illness commenced on October 28th. On admission, membrane on uvula, tonsils, and pillars of fauces. Urine, one fifth albumen.

Was allowed to get up on November 14th and 15th, but was sick and got blue in the face, so was kept in bed subsequently.

On November 24th it was noted that the sight was dim, and that patient could not speak above a whisper.

By December 9th, however, the sight had so much improved that she could read. The voice, however, returned more slowly. There is no note of the knee-jerks.

No other paralysis recorded.



CASE 19. *Diphtheria ; albuminuria ; paralysis of palate and accommodation ; cardio-gastric attacks ; paralysis of diaphragm, &c. ; recovery.*—A. B—, girl æt. 15, was taken ill on June 6th with sore throat, for which she was admitted under Dr. Sharkey on June 10th, 1892. There was membrane on the tonsils and fauces, which were a good deal swollen. The urine contained a trace of albumen. There was an attack of epistaxis on the evening of admission. The membrane continued until the 22nd. The amount of albumen in the urine increased, and there was a good deal present during the second and third weeks. Vomiting occurred twice on the 19th, and again on the 20th and 21st. Fainting attacks occurred on the 21st. Regurgitation to the nose was first noticed on the 25th, when the patient was again sick. Patient became very faint and collapsed on the 27th. Failure of accommodation was first noticed on July 2nd, and lasted some weeks. Pain in the left calf troubled the patient from July 4th to 6th. She had a fainting attack on July 14th, when she was again sick. On July 24th slight paralysis of the left external rectus and of the right side of the face was first noticed. On July 25th it was observed that the patient was very short of breath, that she was unable to cough, that she had to stop for breath several times when she tried to count up to ten, and that the epigastrium was drawn in with inspiration whether respiration was natural or forced. This affection of the diaphragm continued about fourteen days. The knee-jerks were noted absent on July 29th. On leaving the hospital on September 15th the knee-jerks were still absent, but all the paralytic symptoms had disappeared, except that the grasp of the right hand was weaker than that of the left.

CASE 20. *Inco-ordination ; paralysis of external recti ; loss of knee-jerks ; difficulty of diagnosis ; supposed cerebellar tumour ; complete recovery.*—W. H. G—, æt.  $5\frac{8}{12}$ , admitted under Dr. Bristowe February 14th, discharged March 22nd, 1889.

Scarlet fever, September, 1888, varicella in October, measles in December. No history of sore throat.

On January 26th he fell as he was running. He was



able to walk home, but on the next day he could not walk. On January 29th a peculiarity in the eyes was noticed by his mother.

The child, who was very intelligent, said that coughing had been excited by swallowing a short time before admission. Never regurgitation through nose.

On admission gait unsteady, with tendency to fall to either side. Double vision in all positions. The left eye hardly moved to the left of the middle line, and the right did not go to the outer canthus. All other movements good.

Knee-jerks absent. Superficial reflexes brisk.

Accommodation good, can thread a needle successfully.

*Progress.*—Child steadily improved. The double vision disappeared by February 26th. By March 9th the staggering had disappeared. Child had no headache, no vomiting, and was always bright and cheerful.

When he went out the knee-jerks were still absent.

The boy was seen again June 20th. He seemed quite well in every respect, but the knee-jerks were still absent.

August 9th.—Boy seen again. The knee-jerks had returned, and he seemed well in every respect.

The mother gave me the following history. About a week before Christmas he was taken ill with measles, his brother being also ill with the same complaint. He had only a slight attack, and the rash did not come out well. He made no complaint of his throat, and swallowed well throughout. About the end of January she noticed that he would choke and cough when he swallowed liquids. Soon after this his eyes were affected with squinting. He next began to stagger when walking, so that she thought he had St. Vitus's dance.

I have no doubt the case was one of diphtheritic paralysis. About the time the boy had measles a number of cases where diphtheria complicated this disease were admitted to the hospital.

CASE 21. *Diphtheria of larynx; tracheotomy; gruff, harsh, deep voice during convalescence, probably due to paralysis of external tensors of larynx; loss of knee-jerks.*—C. C., male æt. 6, admitted January 30th, discharged April 11th.

Measles nine weeks before admission. Difficulty of breathing for two weeks.

*On admission.*—Much dyspnœa. Tracheotomy performed at once.

*Progress.*—No paralytic symptoms developed, with the exception of alteration of voice, which became very deep, harsh, and gruff, and remained so. The knee-jerks were brisk throughout the stay in the hospital. There were very profuse perspirations.

June 28th.—Voice still as harsh and gruff as before. Knee-jerks not obtained. Still perspires very much.

August 10th.—Voice unaltered. Knee-jerks brisk. Still profuse perspirations. Very well in other respects.

September 17th.—Voice unaltered. Only slight perspirations now. Knee-jerks brisk. Quite well in other respects.

CASE 22. *Diphtheritic paralysis a short time after recovery from chorea.*—J. S—, a boy æt. 9, was in the hospital under Dr. Harley from January 16th to February 24th, 1889, for an attack of chorea, from which he recovered. He had a sore throat while in the hospital, but it was so slight that no note was made regarding it. The first week after he left the hospital he had dimness of vision, and saw double for about a week. He had also about the same time some difficulty in swallowing. For some four days before he was brought a second time to the hospital his legs had become weak, and he was apt to fall down on walking.

He was admitted for this on April 8th, 1889, and remained until June 9th.

He could walk fairly well, but said he soon became tired. The right arm and leg seemed weaker than the left. No choreic movements. Knee-jerks feeble. Urine, a trace of albumen.

On April 17th I noted “knee-jerks not obtained. Palate moves well. Good reflex.”

April 23rd.—“Slight paresis of palate as made out by more careful examination.”

The knee-jerks were persistently absent after this date.

May 6th.—Stands and walks with legs widely apart. Would stumble unless assisted in walking. Sensation good

on palate, but no reflex movement on touching. No numbness anywhere, no "pins and needles."

May 15th.—Gait as before; legs wide apart, unsteady.

June 8th.—Walks very much better, but knee-jerks still absent.

August 9th.—Seen again. Knee-jerks still absent. He walks much better. Mother says he still stumbles sometimes, as if from his legs giving way, but he never now falls right down as he frequently would do when he was last seen.

September 27th.—Seen again. Knee-jerks still absent, although he now walks well.

CASE 23. *Diphtheritic paralysis; cardio-gastric crises; death.*—W. C—, æt. 4, was taken ill with a bad sore throat about the middle of June, 1888. He soon after had difficulty in swallowing, attended with choking and regurgitation to the nose. His voice grew weak and nasal. He gradually lost the power of walking.

He was admitted to the hospital on the 18th of August, under the care of Dr. Ord. Although weak on his legs he could walk a short distance fairly well. In drinking he choked a little. His speech was nasal, and so indistinct that it was difficult to make out what he said.

The knee-jerks were absent.

He got rapidly weaker. On the 22nd he had severe attacks of vomiting about ten minutes after he was fed, which was done with the nasal tube. These attacks were said to be accompanied by dyspnœa, which was probably the result of cardiac failure, as it was accompanied by pallor and blueness coming on suddenly. During the night and day following he had two or three such attacks without vomiting. On the evening of the 23rd he was noticed to get suddenly blue without any alteration in his breathing, and he died quietly without a struggle.

CASE 24. *Diphtheritic paralysis; cardio-gastric crisis; death.*—R. D—, boy æt. 10, admitted under care of Dr. Ord, June 17th, 1886, died July 6th.

Four weeks before admission he suffered from bad sore

throat. Soon after the throat got well he noticed that fluids returned down his nostrils. It was also noticed that he squinted.

*Condition on admission.*—Thin boy, with double internal squint, defective vision, nasal voice, and difficulty in swallowing.

Marked paralysis of both external recti, but no diplopia. Paralysis of accommodation. Fundus normal.

Speech nasal. The labials *b* and *p* become *v* and *f* respectively. The palate hangs flaccid and irritation causes no reflex movement. He cannot swallow quickly, and when he attempts to do so liquids are forced into the nose. He is unable to whistle. Sensation diminished in lips, tongue, palate, fauces, and tonsils.

Knee-jerks present, but slight; plantar slight. No affection of bladder or rectum. Urine, two thirds albumen.

*Progress.*—The albumen in the urine gradually diminished and disappeared by June 28th, being absent subsequently. The patient had attacks of vomiting on the 28th, 29th, and 30th of June, and on 1st of July, but otherwise appeared to be doing well. On the 5th he was again attacked with vomiting, the temperature rose to  $103^{\circ}$ , and the patient died, apparently from cardiac failure, the same evening.

*Post-mortem.*—There was a small superficial hæmorrhage of the size of half a crown upon the upper portion of the vertex of the right hemisphere. The lower lobe of the left lung was consolidated, but the inflammation appeared to be passing off, and collapse was a prominent feature.

CASE 25. *Diphtheria ; paralysis ; death.*—A. P—, girl æt. 4, admitted under Dr. Harley for diphtheria, November 4th, and died December 10th, 1887.

Illness commenced on October 31st, when the mother noticed a rash. Throat became sore on the 2nd November. Admitted with membrane on right tonsil. Glands enlarged. Urine, four fifths albumen.

November 21st.—Throat still a little congested, but much less. Only a small quantity of albumen. Child very weak, but no obvious paralysis. Knee-jerks not obtained.

November 26th.—Voice nasal, but no return of food



through nose. Knee-jerks still absent. Urine, one eighth albumen.

December 9th.—Quite unable to stand or sit up or to hold head up when held upright. Saliva runs out of mouth when lying in bed. Great difficulty in swallowing, which excites coughing. Voice nasal. Disinclined to speak. In respiration much more action of diaphragm than of intercostals. Knee-jerks absent. Heart's action regular.

December 10th.—Got rapidly worse and died.

No post-mortem examination.

ON THE  
COMPLICATIONS OF SCARLET FEVER,  
WITH SPECIAL REFERENCE TO FACTORS CONCERNED  
IN THEIR INCIDENCE.

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It is a matter of considerable difficulty in treating of any disease to lay down a hard and fast line between what should properly be considered a complication, and what with equal propriety might be regarded as a symptom of the disease itself.

This is in part due to our uncertainty as to the intimate nature of the particular morbid process concerned, and our ignorance of its precise limits ; and to some extent to the loose way in which the term complication is variously applied, both to a diseased action having a close pathological connection with the malady in question, and again to any condition which in its nature is merely an accident retarding recovery. Perhaps in no disease is this difficulty more apparent than in the case of scarlet fever. In the latter connection, the application of the term complication to any such rare condition as pleurisy, which is occasionally done, would be hardly less consistent than would be the extension

of the term to embrace a strangulated hernia or a broken leg contracted during the course of the illness.

But in the case of scarlet fever, even assuming that we strictly limit the term complication to those appearances which by their relative frequency, and the analogy of their morbid processes, we are justified in regarding as directly dependent on the action of the scarlatinal poison, we are occasionally confronted with a manifestation such as rhinorrhœa, which by some would be regarded as a complication, while by others it would be viewed rather as an essential symptom of the disease. To my mind this muco-purulent rhinorrhœa presents no more claim to be considered a complication than does the swollen ulcerated condition of the fauces or the infiltration of the glands and cellular tissue associated with it, which together serve to mark at an early stage the severe and septic type of the attack.

Although in the present state of our knowledge no logical definition is possible, yet, recognising the confusion in terms which exists, some sort of distinction between complications and symptoms is at least a matter of clinical convenience. It will be well, therefore, before proceeding further, that I should distinctly state what I regard as a complication as a basis for the following observations.

I would define a complication as "an affection which has a distinct tendency to arise during the course of any particular illness, but of which the appearance is the exception rather than the rule. It must, therefore, be regarded as a contingent rather than a necessary phenomenon of that disease."

Having regard to the fact that scarlet fever is a disease of such extensive prevalence, the amount of attention devoted to the consideration of its complications in the textbooks of medicine seems hardly proportionate to the importance of the subject. It would seem, therefore, that the statement of a few more detailed facts, in connection with their nature, their prognostic significance, and the conditions concerned in their incidence, may not be without practical value. At the same time it should be remembered that the complications of scarlet fever are attended with nothing like the same relative fatality as obtains in the case of certain

other members of the infectious group, *e.g.* measles and enteric fever.

The large proportion of deaths attributable to scarlet fever are due rather to the severity of the attack in its acute stage than to any of its later developments.

The following list gives the percentage incidence of complications arising in the scarlet fever cases completed in the South-Western Fever Hospital during the last three years, numbering 4015 :

Otitis (with discharge) occurred in 11·05 per cent.			
Adenitis (cervical)	„	8·74	„
Rheumatism (articular)	„	4·50	„
Albuminuria (simple)	„	4·28	„
Nephritis (acute)	„	3·41	„
Eczema	„	2·11	„
Ulcerative stomatitis	„	1·96	„
Tonsillitis (secondary)	„	1·64	„
Bronchitis	„	1·12	„

Conditions complicating recovery which occurred in less than 1 per cent are disregarded.

It may, however, be mentioned that relapses, *i.e.* *undoubted* cases of scarlet fever which showed a second attack before leaving the hospital, were met with in ·87 per cent. of cases. This is nearly in accord with the result noted in a larger number of cases previously treated, in which the percentage of relapses came out at ·6 per cent.

*Otitis* (454).—This may occur either in the form of a simple inflammation of the external auditory canal, with possibly more or less involvement of the membrana tympani, in which case it is but a trivial affection of short duration ; or, as is far more common, in the form of an otitis media, followed by a more or less profuse muco-purulent discharge. The collection of inflammatory products pent up in the tympanic cavity, if not let out by incision, will soon relieve itself by rupture of the membrane.

That this affection is usually due to an extension of the naso-facial inflammation along the Eustachian tube with narrowing of its calibre is, I think, fairly certain,—at any rate, when it appears early in the attack, before the throat



inflammation has subsided. It is possible that the pathology of the condition when it arises at a later date during convalescence may bear a different interpretation, and be more directly connected with the special susceptibility of epiblastic structure to the action of the scarlatinal poison, as suggested by Dr. Astley Gresswell ; for there is no manner of doubt that the complication is one directly related with the youth of the patient, a time when the differentiation of the blastodermic layers is less complete than in after years.

The distinctive signs of the affection are pain in the ear, great tenderness over the cartilaginous portion of the canal, irritability of temper with more or less fever, followed usually after one to three days by rapid loss of the pain, tenderness, and temperature on the appearance of the discharge. The glands immediately beneath the ear are usually enlarged and tender, and may remain so for several days. They occasionally suppurate.

The otitis may arise at any stage of the scarlatinal attack after the first few days. Severe cases are much more liable to the complication than mild ones, and in such instances it usually appears earlier in the attack, viz. about the end of the first week of illness. It is essentially an affection of early childhood, the liability decreasing with each year of life. After fifteen years it is very rare, but there is a tendency even in adults for old ear mischief to be lighted up by the scarlatinal attack. The influence of sex is negative.

The discharge usually ceases after from two to four weeks' treatment, but in exceptional instances cure may not be effected in less than three or four months. Suppuration of the mastoid but rarely threatens, and timely incision down to the bone will be usually successful in averting further trouble. In this series of 450 cases of the complication, only one necessitated the use of the trephine. In this case communication was established with the tympanic cavity through the bone, and the case terminated favorably. Whether further trouble will ensue later on in any of these cases it is impossible to predict ; but as, with the exception of some half a dozen, in which the disease was of old

standing, all discharges had ceased before the patients were sent home, there is reason to hope that such result will not be of frequent occurrence. My belief is that the danger of later developments, at any rate in hospital-treated cases of scarlatinal otitis, is much overstated, and that the majority of those cases of pyæmia connected with chronic otorrhœa which are met with in the general hospitals are dependent on a scarlatinal attack treated in the patient's own home, cases in which, by neglect, a septic condition of the middle ear is allowed to develop with subsequent extension to bone. It is a mistake, however, to regard fœtor of discharge, which is the rule even in the early stage, to be necessarily connected with bone disease. An additional fact which justifies me in my belief that the very large majority of these hospital-treated cases of scarlatinal otitis are really cured, is that it is the rarest thing to find evidence of impairment of hearing in patients at the time of their being sent home, although allowance must be made for the difficulty in determining the relative acuteness of hearing in young children.

*Adenitis* (351).—The affection referred to is a somewhat rapid swelling of one or more of the cervical glands, either behind the jaw, or deeper placed under the sterno-mastoid, occurring during the stage of convalescence, the temperature having been normal perhaps for from one to three weeks. It is attended with a fresh rise of temperature, which remains elevated for a longer or shorter period, dependent on whether the gland proceeds to suppuration or, as more frequently occurs, resolves. In the latter case the temperature returns to normal usually within three days. Its fall, like its rise, is frequently somewhat sudden.

The gland swelling, which occurs early in the scarlatinal attack in connection with an inflamed throat, is not here referred to. This, which in some degree is common to all cases with any throat affection worth speaking of, may vary from a very slight glandular fulness up to the most severe condition of gland infiltration, attended with enormous swelling of neck and a profuse muco-purulent rhinorrhœa, all of which are directly dependent on a septic, ulcerative inflammation of fauces and tonsils. In such cases the con-

dition is really one of septic adeno-cellulitis, and is sometimes described by the term "bull-neck." Such cases are excluded because they are part and parcel of a severe attack in its acute stage, and partly because they are due to an obvious primary cause, precisely in the same way that a gland swelling is seen as a direct consequent on pediculi or an eczema capitis.

The condition to which I refer would seem to be a primary pyrexial adenitis, occurring at a late stage of the disease, and unconnected, as far as can be seen, with any local exciting cause. In its pathology it would appear to be more directly related to those cases of sudden gland swelling arising as a result of what is called, for want of a better name, "taking a chill," whatever that really means.

These cases of adenitis are often seen to arise in groups at about the same time in patients located in different parts of the hospital. It is met with about equal frequency at all times of the year, and I have not been able to establish any clear connection with either cold, damp, diet, or habits. The fact of its occurrence in groups in the way I have indicated appears to suggest a wide-spread causative influence, such as some varying atmospheric or soil condition. It is more often met with in patients the subject of albuminuria, especially in those who have developed a distinct nephritis.

It is a complication rarely met with after the fourth week of illness, being more common in the second than the third and the third than the fourth. It is far more common before the age of puberty than afterwards, and is perhaps more frequent after severe than mild attacks. No special liability in connection with sex is apparent. The affection always terminates in recovery. About one third of the cases suppurate, and it is always wise, in opening such collection, to make use of a drainage-tube in view of the tendency there is to the formation of a residual abscess.

*Articular rheumatism* (181).—Rheumatism of sufficient intensity to give rise to elevation of temperature, pain, tenderness, and distinct effusion into the joints is a common complication. Its most frequent seat is the smaller rather than the larger joints; the arms suffer more frequently than the legs, the hands and wrists than the elbows or

shoulders, and the ankles than the knees or hips. Most frequently of all it appears in the metacarpo-phalangeal joints and the wrists, but evinces a certain tendency to migrate.

There are good reasons why it should be regarded as pathologically akin to ordinary acute rheumatism, though differing in certain respects. It is very prone to arise in persons who have been subject to antecedent attacks of acute rheumatism, although these cases are in the minority. It shows the same tendency to move from joint to joint but in a less degree, and it is readily amenable in most instances to the action of salicine and the salicylates. On the other hand, it is less severe than ordinary acute rheumatism, its natural bent being more towards recovery ; it is unattended with the acid perspirations and the creamy furred tongue so characteristic of that condition, and it shows but little tendency to affect the fibrous tissues of the heart or pericardium. Moreover the joints are more prone to take on a suppurative action leading to a condition of pyæmia than is seen in relation with the ordinary rheumatic process.

It is far more common in adults and in older children than in young ones, and affects females in much larger proportion than males. It arises independently of season or temperature, being equally common in the summer and early autumn months as in the colder seasons. Its time of onset is remarkably constant, viz. the fifth, sixth, or seventh day of illness, at a time when the rash is just disappearing and the temperature falling to normal. It is more common in connection with severe attacks than with mild ones ; cases characterised by an intense rash and copious peeling are more often affected than the mild ones, and it is in cases such as these, especially if of the septic type with ulcerated fauces, that the joint affection has a tendency to assume the suppurative form. The prognosis in ordinary cases is good, the affection usually yielding readily to treatment with the salicine compounds.

The cardiac structures are rarely involved, probably in less than 3 per cent. In those exceptional instances in which the joints suppurate the elbow and sterno-clavicular



joints seem to be earliest and most frequently affected. In the former case early evacuation of the joint with antiseptic irrigation is usually followed by the best results.

*Albuminuria* (172).—This number does not represent the total number of cases in which albumen of every degree was observed in the urine. Cases of acute nephritis are not included, nor are those instances in which only a faint and transient cloud was noted on examination of the urine for less than three consecutive days. Besides which the urines during normal convalescence, unless any special indication existed, were only tested twice a week, and in infants it was not always possible to examine the urine with absolute regularity.

The test employed was a delicate one, viz. the addition to the urine of an equal bulk of a saturated solution of picric acid, *plus* one drop of acetic acid to the drachm. A good plan in systematic testing for albumen is to employ the cold nitric acid test by way of confirmation to any urines giving a positive result with the picric acid. In this way the possible fallacies are reduced by the exclusion of peptones and mucin.

The incidence of scarlatinal albuminuria in patients treated in hospital wards is not so great as is usually supposed. It must be remembered, however, that the inclusion of three or four beaten-up eggs in the diet of an adult will produce albuminuria by simple diffusion. In this series the amount of easily diffusible albumen given in the diet was not sufficient to give signs of its presence in the urine, so that instances of albuminuria due to this cause were not to be expected.

That those cases of albuminuria in which a faint cloud only could be obtained with picric acid for less than three consecutive days may be safely absolved from having any prognostic significance, I believe, owing to the fact that they do not show any tendency to recurrence, nor does the urine on careful microscopical examination yield evidence of containing any renal product. But in reference to cases of albuminuria of greater degree, it is an admittedly difficult thing to draw a distinct line of demarcation between them and those which are deserving of the name acute nephritis, because cases of acute nephritis vary so widely in the severity and constancy

of their symptoms. Nor must it be forgotten that certain very exceptional cases of nephritis are met with in which though the clinical signs and post-mortem appearances are characteristic of the disease, yet the urine, even on careful daily examination, has shown no sign of albumen. I have met with three such instances.

Pathologically, the difficulty of separating the two conditions is greater still, because the constancy with which kidney changes are present in cases of uncomplicated scarlet fever is a matter of dispute, and the opportunity of verifying the presence of substantive disease of the kidney in cases of simple albuminuria, so called, is of rare occurrence.

For my own part, I hold strongly to the belief that although changes in the renal tissue are by no means necessarily present in an ordinary attack of scarlatina, yet, where either simple albuminuria of any degree or acute nephritis does supervene, it is due to essentially the same morbid process, varying perhaps simply in its intensity, or may be, in virtue of a special vulnerability of the particular subject's kidney.

The assumption that a simple albuminuria and a nephritis are both the expression of the same morbid action, varying mainly if not entirely in respect to its degree, is supported by certain facts observed in connection with their development. Their relative prevalence in a particular outbreak or in a particular ward is in agreement; they both tend to arise under the same conditions of environment; deficient ventilation, over-crowding of wards, especially with acute cases, climatic changes, chiefly in respect to atmospheric humidity, all have an apparent influence in determining the appearance of them both. It may be noticed in passing that cold, *per se*, seems to be without influence, but cold in conjunction with damp is often followed by the appearance of fresh cases. They both show a tendency to develop at the same stage of the illness, viz. during the second and third week (most frequently the tenth to the twenty-first day).

The age liability also is in agreement, the susceptibility to both affections being fairly constant from the second year of life to the fifteenth, after which age, however, cases of simple albuminuria are relatively more common than those

of acute nephritis. The fact also that there is as great a tendency for cases of simple albuminuria to develop acute nephritis as there is for cases of acute nephritis, if neglected, to relapse, is additional evidence in the same direction.

That kidney complication is less frequently met with in cases of scarlet fever treated in hospital than it is in those treated in their own homes, at any rate amongst the poorer classes, I have no doubt; and it is quite possible that this is in part referable to the fact that during their illness the patients are kept under more favorable atmospheric conditions, and also to the fact that the action of the skin is encouraged by the employment of frequent and periodical warm baths, commenced directly the temperature has reached the normal, and continued during the stage at which the renal susceptibility is at its greatest.

Cases of postural albuminuria are occasionally met with, and it is probable that their pathology is of a more complex nature. The very large proportion of patients who have been the subjects of simple albuminuria completely lose their albumen in a few weeks, and I cannot call to mind an instance of a scarlatinal patient being discharged with albumen in the urine who had not previously suffered from a definite attack of acute nephritis.

*Acute nephritis* (137).—Although, as we have seen, it is not easy to draw a distinction between certain mild cases of nephritis and those of simple albuminuria, in the large proportion the symptoms of a profound inflammatory affection of the kidney are sufficiently pronounced to warrant the designation “acute nephritis.” They are not, however, so numerous as those following under the head of “simple albuminuria.” If we regard the two classes as simply an expression in different degree of the same diseased action, and include both groups, the percentage of cases showing renal affection in this series of 4015 attacks comes out at 7·69.

The symptoms of onset are in the majority of cases sudden and pronounced, comprising headache, vomiting, often a rigor, drowsiness, sudden elevation of temperature to 103° or 104°, the appearance of blood and albumen in the urine, and a greater or less degree of suppression. The

period of suppression corresponds usually with the febrile stage, and is seldom at its height until the second or third day, by which time the excretion may have fallen to 3 or 4 ounces, often with frequent desire to pass water. The skin is hot and dry, the pulse excitable, the respiration rapid, the tongue dry, and by this time there is usually evidence of slight anasarca, best seen in the face, loins, hands, and feet. The febrile stage usually lasts from three to six days, and the temperature is very variable, often fluctuating between  $97^{\circ}$  and  $102^{\circ}$  or  $104^{\circ}$  several times during this period. In my experience it is hardly ever sustained for twenty-four hours at a stretch, but is of a strikingly "spiked" character when charted. The pulse, which has been variable both in rhythm and strength, not infrequently becomes preternaturally slow and full towards the end of the week, by which time the urine is becoming excreted in greater quantity. In a smaller proportion of cases the onset is much more gradual, the febrile signs being preceded by the appearance and gradual increase of albuminuria for several days. In these cases the condition does not at any time look so alarming, but the prognosis is less favorable, and when recovery ensues it is usually more protracted.

Hæmaturia in some degree is a constant symptom, but anasarca to any extent is rare. The nephritis is often associated with adenitis, and not infrequently with rheumatism, which has probably preceded it. Acute nephritis, like simple albuminuria, most frequently arises during the latter part of the second and the third week. In a small number of cases it appears as late as the fourth week. It is most frequent in cold, damp, or "muggy" weather. All ages are liable to it, but it is less frequent after puberty. Sex seems to be without influence up to fifteen years, but at a later age males are more liable. Nephritis is as common after mild attacks of *undoubted* scarlet fever as after severe ones.

The prognosis in nephritis arising in patients while in hospital is good. During last year, of 2148 consecutive admissions 65 developed nephritis in the hospital, of which 4 died and 2 were discharged with chronic albuminuria after six months' treatment; whereas of 12 patients who



were admitted suffering from scarlatinal nephritis, 4 died and 3 were discharged with chronic albuminuria after a prolonged residence. Now although, as regards the latter class, the results were more than usually unfavorable, yet the facts are striking, and are in confirmation of results previously noted in a much larger series of cases.

Death in scarlatinal nephritis is almost invariably due to the advent of one of the three following conditions, arranged in their order of frequency: uræmia, suppurative inflammations, or acute pulmonary œdema, of which the last is by far the most frequently fatal in its results.

*Eczema* (86).—The parts most often affected are the face, the scalp, and the ears. In the latter case it is usually found at the junction of the ear with the side of the head, within the groove of the helix, and round the external auditory meatus, where it is directly dependent on the irritant effect of an otorrhœa. The same condition is noticed round the external nares and on the upper lips, where also it is usually connected with a discharge from the nasal passages. It commonly assumes the impetiginous form, and is greatly aggravated by the child being allowed to pick the affected spots. In this way it may be transmitted to the chin or any other part. It is far more frequent in young children than in older patients, and more often affects those on a meat diet. Not infrequently it is associated with ringworm of the scalp. Eczema is more common in the winter months than in the warmer seasons, and is very liable to supervene in children whose faces have become chapped by previous exposure. Most cases yield readily enough to treatment, but eczema of the scalp is occasionally very intractable. A great deal depends on the amount of care and attention bestowed by the nurse, and it is above all things important to attend to the discharge in connection with which it has developed. Although all young children are to a considerable extent liable to impetiginous eczema, yet it far more frequently arises in connection with scarlatina than with any other infectious disease.

*Ulcerative stomatitis* (80).—The condition here referred to varies enormously in the severity of its manifestations

It most frequently begins as a simple sponginess of gum, often in connection with a carious tooth. Ulceration then appears at its free border, with a tendency to bleed on being touched. The diseased action next tends to spread laterally, and affects either the adjacent border of the tongue or the buccal surface of the cheek or lip. The disease may stop at this point, and remain limited to the appearance of a few shallow ulcers with an angry-looking margin and a greyish floor, in conjunction with the spongy ulcerated condition of the gum before referred to. Such cases are invariably attended with a moist and somewhat brownish coating to the tongue, a certain degree of salivation with enlargement of the submaxillary lymphatics, and a distinctive foetor of the breath. They are unaccompanied by any rise of temperature or serious constitutional disturbance.

In other cases, however, it may be very different. The ulceration of the gums rapidly spreads and assumes a necrotic form. The teeth become loose or fall out; the ulcers on the tongue, lip, and cheek take on a fungating character, or actual sloughs may appear in the latter situation, and eventually, if the case be left to itself, involve the whole thickness of the cheek. A black incrustation forms on the teeth, and the temperature may be raised several degrees with signs of profound constitutional depression.

Cases of this degree of severity, deserving the name noma, are of rare occurrence, and if taken early may be cured by energetic treatment. Nothing short of immediate and complete destruction of the diseased surface, if necessary under chloroform, will avail. I have never lost but one such case, and in that instance the patient was also the subject of measles with broncho-pneumonia, and his condition was too precarious to allow of radical treatment.

Ulcerative stomatitis complicating scarlet fever is essentially a disease of young children, being practically unknown after the age of puberty. It shows no special connection with either sex or season, but is most common in strumous subjects, and in those who are suffering from or who have recently had measles.

There is a distinct predisposition for the diseased

mucous membrane to become infected with diphtheria, and I have seen three cases of ulcerative stomatitis arising in the ordinary manner in which this complication supervened, and ultimately proved fatal by involvement of the larynx.

There is little doubt that those cases of "buccal diphtheria" reported by Bretonneau as occurring in the French army in 1818, and those which are described as affecting the same troops in the Nile campaign, were in reality cases of diphtheria implanted on a scorbutic ulceration of the mouth. The simple affection is contagious, and great care should be taken in reference to cups, spoons, handkerchiefs, &c., used by its subjects. Many and various micro-organisms are present in the mouth in such cases; the one I have found most constant is a large diplococcus growing well in glycerine agar at 33° to 37° C.

*Tonsillitis (secondary)* (66).—This affection when simple is not of great importance in itself, but is interesting in so far as it tends to arise under conditions which are also favourable to the development of that most grave of all complications to which scarlet fever patients are liable, viz. diphtheria. Into the question of this liability I am not prepared to enter here, as the subject is much too wide to be discussed in a brief summary such as this, beyond which its incidence in this hospital, I am glad to say, has never been in anything like 1 per cent. of cases.

I will content myself with the statement that its appearance to a great extent seems to be influenced by conditions of soil, climate, and ward hygiene.

Secondary tonsillitis is very much more frequent in adults and older children, in females, and in those who have previously been subject to it. Severity of attack, damp weather, and over-crowding of wards with acute cases exert a marked influence. It is rarely severe, and suppuration is infrequent. The liability seems to be about equal at all stages of convalescence.

*Bronchitis* (55).—The affection when appearing in a scarlatinal patient presents nothing unusual in its characters. It is most frequent during cold weather, chiefly affecting young children, in whom it usually appears at an early stage of the illness. It is rarely of any prognostic importance except in

children, who are specially susceptible in virtue of previous attacks.

Amongst other conditions incidental to convalescence, but of which the occurrence is sufficiently rare to make it doubtful whether they should be regarded as having any direct connection with the action of the scarlatinal poison, may be mentioned urticaria, herpes, psoriasis, abscess, cellulitis, boils, and ophthalmia. It should also be remembered that scarlet fever convalescents are very liable to take the infection of any other member of the group to which they may be exposed, in this respect showing an equal liability with convalescents from any other acute disease.

In order to briefly summarise the influences which operate to a greater or less extent in determining the appearance of the various complications, it may be well to add a few remarks under the following headings.

1. *Age.*—The wide variation in liability to the different affections in connection with age is well brought out in the following table, which deals with their percentage incidence amongst 2078 cases completed during the year 1892.

Age periods.	0—4.	5—9.	10—14.	15—19.	Over 20.	All ages.
Otitis . . . . .	18·5	10·1	4·1	0·7	2·5	9·91
Adenitis . . . . .	11·7	10·0	8·3	1·4	2·5	9·19
Rheumatism . . . . .	0·4	4·5	9·0	9·9	13·6	5·53
Albuminuria . . . . .	4·4	3·2	2·0	5·6	5·1	3·52
Nephritis . . . . .	3·6	3·7	3·6	0·7	0·8	3·32
Eczema . . . . .	3·8	1·3	0·6	0·0	0·0	1·58
Tonsillitis (secondary) . . . . .	0·2	1·1	2·9	1·4	2·5	1·44
Ulcerative stomatitis . . . . .	3·4	1·1	0·4	0·7	0·0	1·39
Alb. and nephritis combined . . . . .	8·0	6·9	5·6	6·3	5·9	6·83

It will be seen that during the first quinquennium the liability to otitis, ulcerative stomatitis, and eczema is very greatly in excess of what obtains in after years. Adenitis, too, is higher, but in a less degree. The tendency to rheumatism and tonsillitis is very slight, viz. ·2 and ·4 respectively. Nephritis and albuminuria are seen in proportions which vary but slightly from the mean.

During the second quinquennium the preponderance in



favour of otitis, adenitis, ulcerative stomatitis, and eczema is still marked, but to a less extent; whereas rheumatism has become ten times more frequent, and tonsillitis five times, albuminuria and nephritis remaining much the same.

In the third quinquennium, otitis, ulcerative stomatitis, and eczema have fallen considerably below the mean, and adenitis too, but to a less extent. Rheumatism and tonsillitis are above the mean, both being about twice as frequent as they were in the previous age period. Albuminuria and nephritis remain at practically the same level.

In the fourth quinquennium otitis and ulcerative stomatitis have almost disappeared, and eczema quite. Adenitis is only about one tenth as frequent as it was in the first quinquennium.

Secondary tonsillitis and albuminuria are about on the same level, but acute nephritis has fallen to one fifth of the frequency seen in the preceding age period. Rheumatism is still on the increase, and is now considerably in excess of any other complication.

At ages over twenty years the numbers are so small (122) that the inferences are weakened. It will be seen, however, that the percentage of rheumatism has risen to 13·6 and tonsillitis to 2·5, the former being thirty-four times and the latter ten times as frequent as they were during the first age period. Otitis and adenitis are comparatively rare.

Albuminuria is seen at 5·1 per cent., having remained fairly constant right through, but acute nephritis is met with in only ·8 per cent., the drop at fifteen years having been maintained.

Although the numbers from which this table is calculated are not large (2078), the results are quite in harmony with those obtained in a more extensive series of cases. It is, therefore, of value in emphasising the enormous influence which age exerts on the relative susceptibility to the various complications of scarlet fever.

2. *Sex*.—The influence of sex in respect to most of the complications is but slight, but some variation is seen in the case of tonsillitis and rheumatism, females being more liable than males in the proportion of 3 to 1 and 2 to 1 respectively.

3. *Season*.—In connection with the development of otitis,

rheumatism, and ulcerative stomatitis, it seems to be without influence. Albuminuria and nephritis, however, are seen as a rule in somewhat greater proportion during the winter and late autumn months, but cold frosty weather is not infrequently characterised by a diminished liability to kidney trouble. The aggregation of a comparatively larger number of acute cases in hospital wards, as is usually found necessary during the last quarter of the year in consequence of the seasonal extension of the disease, certainly seems to be in part responsible for the increased incidence of kidney affection which is often noted. The greatest influence of season, however, is apparent in connection with the development of eczema, bronchitis, and to a less extent of tonsillitis, all of which are more prevalent in the cold winter and early spring months.

4. *Severity of attack.*—This certainly has a direct bearing on the frequency with which otitis, adenitis, rheumatism, and ulcerative stomatitis are developed, the last complication being still more frequent in attacks which are also complicated by measles.

Severity of attack most usually finds expression in the septic form which the disease assumes, and its nature is often evinced by the increased tendency to the development of later suppurative inflammation.

The liability to affection of the kidneys, as I have already stated, does not seem to bear any relation to mildness or severity of the primary attack.

5. *Environment.*—If the term be used in the Darwinian sense to express the sum of the various external conditions capable of exerting any influence whatsoever on the individual, it must be taken to include not only such extrinsic agents as temperature, ventilation, atmospheric and soil conditions, but also the clothing, feeding, nursing, and even the medical treatment of the patient as well.

It must be admitted that such influences in a certain proportion of cases directly determine either a favorable or a fatal result. In a larger proportion of cases, without claiming so much as this, it seems indicated that the chances of a rapid and uninterrupted recovery are directly related to the suitability of the patient's environment.

Speaking generally, I believe that patients of the hospital class, who are mainly susceptible children, do better under hospital conditions than if treated in their own homes, which are often over-crowded, ill-ventilated, dark, and dirty. It is not so much perhaps that the action of the scarlatinal poison is controlled, but that the system becomes better fitted to resist it, and that secondary hostile influences, whether microbic or not, are counteracted by an improved hygiene and a skilled and attentive nurse.

The ill effects of over-crowding and bad ventilation are made visible by the appearance of kidney affections and secondary throat inflammations, often diphtheritic in their nature. The duration and septicity of ulcerations and inflammatory discharges are directly influenced by the frequency and completeness with which the diseased part is cleansed, and the liability to later manifestations is correspondingly diminished. This is a matter of the highest importance in view of the tendency which there is for suppurative or pyæmic affections to supervene on an ordinary attack of the septic type.

So that, without claiming too much, it may be asserted that not only may the relative incidence and duration of the accepted complications be influenced, but that occasionally the type of the scarlatinal attack itself may be modified by the comparative suitability of its surroundings.

## INTERMITTENT ALBUMINURIA.

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BY T. CRANSTOUN CHARLES, M.D.

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ALTHOUGH the question has been a very disputed one, I think it may now be accepted that albumen is occasionally present in the urine of healthy persons ; but, on the other hand, to assert that there is a trace that may be regarded as physiological in all or in most urines is certainly, in my opinion, going much too far. I have repeatedly examined large quantities of fresh normal urines, with the greatest possible care as to cleanliness, and in their residues, obtained by evaporation at low temperatures under reduced pressures, have entirely failed, except in a few unusual cases, to find even traces of albumen.

The number of observers who have detected albumen in healthy subjects is very considerable, and I shall briefly enumerate here a few of them with the results they obtained. Capitan found albuminuria in 44 per cent. of the soldiers, and in 41 per cent. of the children he examined ; Posner, in 100 per cent. of the 70 cases under his care ; Chateauberg, in 592 out of 701, or in 84 per cent. ; Leube, in 4·2 per cent. of the healthy soldiers examined by him in the morning, and in 16 per cent. of the evenings' urines, especially after the men had marched and paraded many hours ; and Grainger Stewart, in 37·5 per cent. in a series of 505 examinations. These results, as well as those of Beneke, Edlefesen, Firrol, and Fürbringer, all point to the conclusion that an albuminuria may exist without any diseased condition being present to account for it.



For the last fifteen years or so my own attention has also been drawn to the frequent occurrence of this form of albuminuria, and I append here some of the results I have obtained :

1. With apparently healthy students—examinations extending over seven years—258 mid-day urines examined—albumen present in 34 = 13·1 per cent.

2. With 50 healthy soldiers, average age twenty-three to thirty-eight, albumen in 3 of morning urines, and in 7 of evening urines passed after moderate drill ; that is = 6 per cent. and 14 per cent. respectively.

3. Series of experiments made at several times during the last four years in a large training college in London with which I am connected as physician : (a) Men (æt. 18 to 24) living in college ; after their term examination, and before leaving for their summer holidays ; 72 cases of after-dinner urine examined, albumen in 24 (in the form of albumose in 5, and of peptone in 2) = 33·3 per cent. ; 51 urines passed after rising in the morning, albumen in 7 (of which, albumose in 3) = 13·7 per cent. (b) Men from country—board school teachers, &c.,—up for examination, before admission to which 110 cases were examined. Urines passed after early breakfast, albumen in 30 (of which 7 were peptone or albumose) = 27·2 per cent. ; 51 of same men, after-dinner urine, albumen in 16 (albumose 3, peptone 7) = 31·3 per cent. (c) 50 urines examined after early dinner, albumen in 12 (albumose 4, peptone 5) = 24 per cent. (d) 102 men—urines examined during middle of term. Albumen was present in 7 cases of the urine passed before breakfast = 6·7 per cent., and in 16 cases after breakfast (albumose 5, peptone 4) = 15·6 per cent. (e) 48 after-breakfast urines contained albumen in 12 (9 albumose, 1 peptone, 2 albumin) = 25 per cent.

4. Special cases observed among friends and patients.

(a) *Anxiety or over-pressure of business* among members of the Stock Exchange, large speculators, candidates for the Civil Services and army, medical students under examination, 41 cases. In 11 of the students the albuminuria disappeared completely, but in 1 there has been a tendency to its occasional recurrence.

(b) *Interference with the pulmonary circulation.*—That artificial compression of the thorax causes albuminuria has been shown experimentally by Schreiber, who has produced it in 20 out of 26 individuals. In addition he noted the appearance of hyaline cylinders and coloured corpuscles. The only parallel case of this kind which has come under my notice has been that of a stout young lady, in whose urine I accidentally discovered albumen the morning after she had been to a dance; she was accustomed to lace herself very tightly, and the lacing was carried higher than is usually done, so that some compression was exercised upon the breasts. With the abandonment of tight lacing, the albumen disappeared. In this case there was no cardiac hypertrophy, nor any increase in arterial tension; and numerous hyaline cylinders were frequently present.

(c) In 3 patients with healthy kidneys, but with *marked and obstinate constipation*, albuminuria continued for some time. In 4 lads also it was noticed. The albuminuria here may be in part ascribed to some interference with the circulation, and to alteration in the blood-pressure, but it may also be in part of a toxic nature.

(d) *Prolonged muscular exertion.*—There have come under my notice in the last few years 5 delicate clerks and 11 shop girls, in all of whom traces of albumen are to be detected after a heavy or long day's work. The urine also of a distinguished athletic rowing friend of mine always shows a marked cloud of albumen after a prolonged "pull" on the Thames. His urine has been frequently noted to be free from albumen before, and to contain it after he has taken part in a boat-race. The urine passed when his arterial tension is high, is non-albuminous, but when the latter falls, and he experiences fatigue, albumen shows itself in the urine. In his ordinary sphygmogram the dicrotic wave is well marked, but this disappears almost entirely with the rise of tension. I have also noticed somewhat similar results with many of our students at St. Thomas's after football matches.

(e) In the urine of patients *fed on peptones and the so-called peptones* I have frequently detected albumen. In 5 cases

observed, albumoses were present in all, and peptone in addition in 2.

(f) *Influence of age.*—Dr. Grainger Stewart considers that the proportion of cases of intermittent albuminuria increases as age advances. In reference to this point I, many years ago, made a series of examinations in two large workhouses, but my results do not support this hypothesis. The evening urines of 163 apparently healthy individuals, varying in age from thirty-nine to fifty-five—all cases in which there was no suspicion of kidney disease or of prostatic and vesical catarrh—contained albumen in 14 cases, or in about 14 per cent.; and in the after-breakfast urine of 112 of the same individuals, there was albumen in 19 cases, or in 17 per cent.

Although I am here dealing only with intermittent albuminuria, I may refer in passing to two cases in which the discharge of albumen has apparently been continuous; one (æ. 27) has been under my notice for five, and the other (æ. 31) for four years. In both the amount of albumen is slight (roughly  $\frac{1}{10}$  to  $\frac{1}{15}$ ), but I have never found it absent; the specific gravity, however, generally stands about 1020, the amount is normal, and there are no casts; otherwise the condition of the patients is normal.

In three other cases in which albuminuria followed nephritis, it continued in one of the patients (æ. 17) for four months; in another (æ. 25) for four years; and in the third (æ. 70) for two years.

*Signs and symptoms.*—There are great variations in the amount of albumen present in the urine; occasionally it may be in considerable amount, but in the great majority of the cases seen by me the quantity has been slight. Then it may be abundant at one period of the day, and absent at another. The early morning urine is usually non-albuminous, but it will generally be found in that passed after breakfast. In some individuals, too, the albuminuria may not remit for several days, and I have met with cases in which it was nearly always present, but more abundant at certain times than others, as after meals, exercise, &c.

Anæmic symptoms and marked want of muscular or nervous energy are rarely present, judging from the cases I

have seen ; but there was a tendency in many of them to catarrhal affections and headache.

In examining one of these albuminurics, particularly if the patient is an adult, the family history should be carefully investigated ; very close inquiry made as to the possibility of any antecedent nephritis, or of any of the conditions which lead to the development of lardaceous disease ; further, is the patient of a gouty diathesis, or has he been the subject of lead poisoning ? In addition, the state of the skin as to pallor or œdema, and that of the cardio-vascular system as to the size of the heart, its impulse and sounds, and the condition of the vessels should all receive attention. Indeed, unless these have been first excluded, no case of albuminuria should be pronounced as simply intermittent or functional.

CAUSES OF INTERMITTENT ALBUMINURIA.—Different causes have been assigned, but I shall refer here chiefly to those of which I have seen examples.

1. Although the majority of cases cannot be attributed to *malassimilation of the food taken*, some of them appear to do so. In four patients I have nearly always found that a heavy meal, particularly after fatigue, was generally followed by temporary albuminuria. In two gentlemen (æt. 45 and 50) albuminuria shows itself occasionally in inconsiderable amount, and the only cause assignable is indigestion of some kind. Crystals of oxalate of lime and uric acid are present in the urine at the same time. Is the oxaluria here the exciting cause, as Roberts supposes ? I have also met with another case of dyspepsia (æt. 47) causing oxaluria, in which albuminuria is very liable to appear when there is much nervous depression. Goodhart has drawn attention to the occurrence of this form of intermittent albuminuria in highly neurotic subjects. Dyspepsia in some form is frequently attended by albuminuria. I have noted this in fifteen patients, averaging from seventeen to forty-two years of age, in whom there was intermittent albuminuria, the amount of the albumen varying greatly from time to time, and frequently being present in the urine passed after late dinner.

Semmola maintains that the albuminuria in cases like the above is really due to the presence in the blood of abnor-



mally diffusible albuminoids, for there is strong evidence that the albumins formed immediately after digestion possess considerable diffusibility, a very temporary condition, however, normally ; but it can easily be understood how a disturbance in the normal tissue-changes might increase it. Now, although Stokvis has in some points weakened this hypothesis of Semmola, his refutation is, to my mind, far from complete. A few of my cases of albuminuria may reasonably be assigned to an altered condition of the blood brought about as Semmola suggests. In one young man (æ. 19) whom I place in this category, I repeatedly detected traces of albumen in his perspiration as well as in his urine when he sweated profusely after a meal soon followed by rapid cycling in warm weather ; but I have failed, except on two occasions, to detect any in his saliva.

From time to time I have made experiments with myself and some friends after long cycling trips by swallowing three or four raw eggs beaten up with a little milk and sherry ; but only in the case of one of these friends have I ever succeeded in readily obtaining albumen reactions in the urine ; and in him, I may mention, there is no tendency to albuminuria. With six individuals who suffered from intermittent albuminuria I tried, four years ago, the effects of a rich albuminous diet ; but in only one of them was the albuminuria perceptibly increased. In this young man hyaline casts were occasionally to be found ; but during the last three months no albumen can be discovered in his urine.

Maguire states that the albumen excreted under the above conditions consists chiefly of globulin and serum albumin, and not of peptones ; but in many of these cases I have noted not only the presence of albumose but also of peptones in excess, and in some of them peptones were detected after dinner as well.

The character of the diet undoubtedly causes a variation in the relative proportion of the seralbumin and globulin excreted. As Lecorché and Talamon, Paton and others have shown, the food, particularly a diet rich in proteids, tends to increase the proportion of the seralbumen to the globulin ; and in two of the above cases of intermittent albuminuria experimented upon I found the proportion of

seralbumin generally greatest after breakfast. Milk diet, I also found, tended to increase the proportion of seralbumin.

2. A due consideration of the above would accordingly lead us to believe that *the constitution of the blood, both as to concentration and composition*, may therefore play as important a part in bringing about albuminuria as the blood-pressure, and the velocity of the circulation through the kidneys.

According to Semmola the injection of a foreign albumen into the skin causes albuminuria that lasts as long as the injections are continued, while if they are repeated for some days not only is the foreign albumen excreted, but also seralbumin as well; and even for some time after the injections have ceased this discharge of seralbumin will continue. The passage of the foreign albumen, Semmola thinks, causes an irritation of the glomeruli, and if its elimination is continued for some time structural changes may occur in the kidney.

Hoffmann has shown that the relative amount of seralbumin and globulin in various ascitic exudations bears a direct proportion to those present in the blood; and some authorities hold that the relative amounts of these proteids in urine are due to changes in the blood-plasma. It is very probable also that some alteration in the saline constituents of the blood may affect the proportion of the albumins excreted in the urine.

3. *State of the circulation.*—For the last few years my attention has been particularly directed to the state of the circulation in the cases of intermittent albuminuria that have come under my notice, and I entirely agree with Broadbent that its great characteristic as met with in them is “its extreme instability.” There is often some degree of vascular tension due to increased peripheral resistance, but this is very variable throughout the day, the energy of the cardiac systole fluctuating greatly and often being deficient. The blood, indeed, in some of these cases seems to be loaded with excrementitious materials, which lead to a slight irritation of the kidneys during their discharge; but such kidneys appear to be deficient in power, and no doubt this is very liable to be the case where there is a family history of Bright’s disease.

Instances are likewise to be met with in which the arterial tension seems to be generally low. Maguire directs attention to such cases. In them, he says, the condition of the pulse is variable, easily, however, assuming the characters of virtual tension; and the kidneys are evidently weak parts of the body with a comparatively stagnant circulation. Variations in the peripheral resistance, it should be remembered, are a more important factor of blood-pressure than variations in the heart beat; and it is the condition of the central nervous system which appears to determine whether the reflex effect on the vaso-motor fibres will result in a rise or fall of arterial pressure.

Dr. Haig suggests that the albuminuria is often the result of high vascular tension and of the associated increase in the easily diffusible albuminoid referred to by Semmola. The alkaline tide for the few hours succeeding breakfast, he states, corresponds to a "period of the day when there is generally much uric acid in the blood, and the largest excretion of it in the urine, and as a consequence of its presence in the blood, most excess of pulse tension." That a change in the blood-pressure may affect the nature of the albumen exudate has been shown by Gottwalt and Paton, the seralbumin transuding more readily than the globulin at high pressures, low pressures seeming to favour the transudation of globulin.

Some of my cases correspond to those described by Goodhart as *congestive*, and occurred in patients who were out of health, as the result chiefly of excessive diet and deficient exercise. In some also there was a gouty history. The amount of albumen present was generally slight, and it disappeared under a regulated diet. They were very closely allied to another somewhat similar series of cases I have classed elsewhere as due to mal-assimilation. Under the same head, I suppose, would come the cases of four adults with temporary albuminuria that appeared after shorter or longer periods of debauch. In one married lady (æ. 31) also, of a very nervous type, every monthly period is preceded by albuminuria, lasting about three days and disappearing as soon as the menses begin to flow.

In some of the albuminurias with a low tension pulse,

vascular stasis of the kidney resulting from a weak and inactive heart may be assigned as causative. Such might be classed as albuminuria of unstable circulation, and under this head would come the so-called cyclic and postural albuminurias. As to the last named, some relationship undoubtedly exists between the maintenance of the erect posture in the early part of the day, and the establishment of a proper equilibrium in the kidney circulation. There is a possibility of the sudden assumption of the erect position producing a more or less temporary vascular paresis in the kidneys. That this may occur, especially in some individuals of a neurotic type, is not at all unlikely, nor that these organs may be subject to periods of temporary congestion. Dukes says that in boys the albuminuria is owing to hyperæmic kidneys, hyperæmia that may be reflex or due to the weakening of the vaso-motor system, which may be got rid of by putting the boy to bed for an hour or two, and giving him milk; but being reproduced by causing him to rise and take more food. About the time of puberty it should also be remembered, as Beneke points out, that the large arterial vessels attain their relatively narrowest condition, and this combined with the increased cardiac development brings about arterial tension.

4. Albuminuria is very liable to appear in some people under the influence of *constipation*. I have noticed in four lads its total disappearance under a short course of blue pill and salines. Not only, moreover, does a constipated condition of the bowels increase the tendency to the passage of albumen, but it was also noticed to increase the amount eliminated in three cases of temporary albuminuria.

5. *Muscular exertion*.—Physical exercise exerts a powerful effect in inducing albuminuria, but it is very difficult to explain satisfactorily why the same results are not always to be obtained. That much influence, nevertheless, is exerted by the surrounding temperature, and possibly by the condition of the system as affected by the vascular activity and the digestion, there is much reason to believe.

In four of my cases there was no albumen present in the early-morning urine, nor in that passed after breakfast, but it showed itself at different times of the day after long-



continued exertion—an influence that has also been well pointed out by Leube and others. In certain individuals there is undoubtedly a sort of disposition to albuminuria; probably they have been born with an abnormal porosity of the glomerular membrane, and in them exertion possibly renders the filtration processes freer. Where disease of the kidney is present, strong exercise always increases the amount of albumen.

6. *Exposure to cold.*—Two young men who were under my care for some time, on two occasions on which they called upon me after long railway journeys made in the cold early morning, passed albumen in their urine. One robust friend, in whose urine I have failed to detect albumen under ordinary conditions, once brought me some urine he had passed after a long swim in fresh water, and it was albuminous. In the urine of two friends who used to bathe with me I several times detected albumen after their sea bath; and by my advice they gave up cold bathing entirely, and now no albumen is to be found in the urine of either. In three individuals, moreover, in whom albumen was present in the urine passed after breakfast, I found that the use of a tepid in place of a cold bath led to its disappearance. Barnes likewise refers to several cases of transient albuminuria resulting from sudden immersion in cold water.

In these cases there is a deficient activity of the function of the skin produced, which, according to Semmola, interferes with the due elaboration of the proteids, and may even cause retrograde changes in those previously assimilated. As Haig points out, the cold extremities and contracted skin vessels, which are such common accompaniments of high arterial tension, may be caused by the contracted arterioles diminishing the circulation in those parts, and thus leading to a lowered activity of the skin function.

7. No doubt *causes of a neurotic nature* are inextricably mixed up with many of the causes already referred to. References here will accordingly only be very sparingly made.

In only a few of my cases of intermittent albuminuria have I been able to establish a family history of nervous affections of any kind. Depressing emotions appeared to be the sole cause in the case of one of my female patients.

Over-study, it is well known, usually leads to hurried meals, late hours, and greatly diminished outdoor exercise. Clark has directed attention to the tendency of all nervous strain, especially under emotional excitement, such as examinations with their consequent fatigue and attendant anxiety, to produce temporary albuminuria.

8. As to the *source of the albumose and peptone* in the urine it is difficult to speak with any degree of accuracy. They are often discharged from the blood as such, but there is some reason to believe that this is not always the case. It is possible to separate a ferment of the nature of pepsin from urine, so that a partial or complete digestion of traces of albumen may form one of the sources. Albumose and peptone also disappear rapidly from the mucous membrane of the stomach and intestines, very little being found in the blood owing to the rapid changes they undergo. Now they may enter the circulation too rapidly to be thus disposed of; or there may be some disturbance in the normal tissue-changes; and as Rosenbach remarked some years ago, this specific disturbance may result in the appearance in the urine of one or other of these albumins, just as sugar may do as the result of another specific alteration in the normal tissue-changes. In phthisis, for example, the percentage of cases is considerable in which there is albuminuria and no pathological changes of importance to be noticed in the kidneys after death.

9. *Possible pathological changes.*—Although some authorities are of opinion that the frequent passage of albumen through the glomerular tufts is liable to produce a diseased condition, others regard this as purely hypothetical. I shall refer here to a case where I had the opportunity of examining the kidneys of a former patient (æ. 23) who had been the subject of intermittent albuminuria for the three years preceding his death last year after an accident. I entirely failed to recognise any change in their structure.

It is probable, on the other hand, that the albuminuria which is so frequently seen in fevers, may be due to some alteration in the membrane of the glomerulus, produced by the abundant passage of micrococci, as also to the great

breaking down of corpuscles that occurs. The destruction of leucocytes is common in acute rheumatism, phthisis, and osseous suppurations, in all which diseases peptonuria is frequent.

Some of the cases, no doubt, that are generally looked on as functional, may be regarded, particularly when they occur in adults and are attended with the appearance of casts in the urine, as due to *patches of inflammation in the substance of the kidney*, from which ultimately there may be complete recovery, or which may become the starting-points of chronic disease; but these cases belong to quite a different category from the great majority of what may properly be called intermittent albuminuria.

TESTS.—I shall refer here as briefly as possible to the methods I have generally employed in the detection of albumen, and give a short statement as to my experience and preferences.

In testing for albumen, the urine, as Dr. Johnson accurately lays down, should be examined “not only after rest and fasting—that is, in the morning before breakfast—but after food and exercise. Albuminous urine is usually more copiously so after food and exercise.”

My favourite methods have been Heller’s cold nitric acid test; acidification with acetic acid and boiling the upper layer of the fluid; and treatment with citric and picric acids. Of late, I have also had frequent recourse to salicyl-sulphonic acid. In addition to these, I occasionally make use of one or more of the following tests:—(1) *Potassio-mercuric iodide* ( $KI$ , 3·32;  $HgCl_2$ , 11·35;  $H_2O$ , 100) is a delicate precipitant, but it is also liable to throw down alkaloids, bile salts and urates. (2) *Sodic tungstate or phosphotungstate* is also delicate in its indications, and I find the solution recommended by Dr. Oliver very sensitive [sat. sol. sodic tungstate (1—4), sat. sol. citric acid (10—6), equal parts]. (3) *Trichloroacetic acid*: a small fragment is to be added to the test-tube containing the urine; a cloudiness, or with clear liquids a zone of cloud. (4) *Salicyl-sulphonic acid* is a good precipitant of proteids, and serves as an exceedingly delicate and useful test. All proteids are thrown down by it, and the

precipitate on being boiled becomes remarkably flocculent, except when it is due to an albumose or a peptone, when it disappears, to reappear on cooling. MacWilliam recommends the use of a very narrow test-tube to contain a little of the albumen solution, to which a saturated watery solution of the acid is to be added drop by drop; after the tube has been shaken, it is to be held towards the light against a dark background. When the appearance of immediate opalescence is made the test, then it is less delicate than the acetic acid and boiling reaction, but possibly more delicate than Heller's cold nitric acid test.

I generally begin with the last-mentioned test; then I acidify carefully with acetic acid in slight excess, and rapidly boil the upper third of the fluid in the test-tube, carefully comparing subsequently the translucency of the upper layer with that below it. The nitric acid precipitate is next warmed; if it disappears, the solution becoming intensely yellow and the tint being increased in intensity by the addition of an alkali, but reappears on cooling, albumose is regarded as present. To confirm this indication some of the urine is acidified strongly with acetic acid, and a strong solution of sodic chloride added: albumose, if present, gives a precipitate which clears up on heating, but reappears on cooling; by adding more sodic chloride it will soon be found, however, that further heating will not cause the precipitate to disappear. If no cloud is given with nitric acid, picric acid is then used, when the appearance of a cloud is regarded as evidence of the presence of peptone; to substantiate this, heat is applied, and the peptone precipitate disappears. The biuret reaction can also be looked for, and in cases of doubt one-fifth the volume of the fluid is added of acetic acid, and some solution of sodic phosphotungstate in acetic acid: either at once or after a few minutes peptone, if present, is precipitated.

Albumose and peptone can be distinguished by the precipitation of albumose by ammonic sulphate, but the method is a very slow one. As MacWilliam points out, however, albumose gives a precipitate with salicyl-sulphonic acid when its solution is two-thirds saturated with ammonic sulphate, while peptone does not. Peptones are not precipitated by



salicyl-sulphonic acid, except in solutions already saturated with ammoniac sulphate. The peptone is also characterised by the solubility through heat of its precipitate with Tanret's reagent (KI, 3.32;  $\text{HgCl}_2$ , 1.35;  $\text{C}_2\text{H}_4\text{O}_2$ , 20 cc.;  $\text{H}_2\text{O}$  to 64 c.c.). Although Salkowski's proceeding for detecting peptone in urine is a simple one, I generally employ Hoffmeister's process. To the urine 2 per cent. acetate of soda is added, then perchloride of iron gradually till there is a persistent red colour; now boil till the whole of the iron is precipitated, when the filtrate will contain the peptone.

If albumose has been the only albumen present, apply a gentle heat to some of the original urine, when a precipitate will fall which disappears on heating still more, and reappears on cooling. But no free acid must be present.

In examining for globulin and seralbumin the solution is shaken with magnesian sulphate, which precipitates the globulin; and the seralbumin is to be looked for in the filtrate. The presence of globulin can often be readily shown by adding a drop or two of caustic potash to the mixture of the albumins, and then pouring into the inclined test-tube containing it a saturated solution of magnesian sulphate; the appearance of a white ring will indicate the presence of globulin.

When globulin, seralbumin, and albumose are present together, acidify with acetic or phosphoric acid, add an equal volume of a saturated solution of magnesian sulphate, and after thorough shaking allow the whole to stand in a cool place for twenty-four hours; it is then to be filtered, and seralbumin to be looked for in the filtrate. Globulin and albumose are present in the precipitate. Boil a little of the latter in some acetic acid, when the albumose will be dissolved, but not the globulin.

In *estimating the albumins*, I have adopted Brandberg's modification of Roberts's dilution method. This process, although not as satisfactory as one could wish, gives approximate results, and is based on the fact that the interval between the addition of nitric acid and the formation of the white ring depends on the amount of albumen present.

When 1 part of albumen is present in 10,000 the ring appears at once.

"	"	"	20,000	"	in $\frac{1}{4}$ to $\frac{1}{2}$ min.
"	"	"	25,000	"	in $1\frac{1}{2}$ min.
"	"	"	30,000	"	in $2\frac{1}{4}$ —3 min.
"	"	"	35,000	"	in 4 min.

Five small conical glasses are needed, and the urine is diluted to ten times its volume with water, 2 c.c. are placed in each glass, and water is then added, 4 c.c. to the first, 13 c.c. to the second, 28 c.c. to the third, 43 c.c. to the fourth, and 58 c.c. to the fifth. Nitric acid is next run into each by means of a pipette. By experiment we find, say, that the white ring forms in four minutes, and therefore indicates 1 part of albumen in 35,000.

Esbach's method, more particularly as modified by Paton, is also frequently employed by me: 20 c.c., say, of the urine are neutralised with a few drops of a dilute solution of caustic potash, magnesian sulphate in powder added to saturation, to secure which the flask containing the mixture is frequently shaken, and kept for twenty-four hours in a warm place. Filter, and place some of the filtrate in an Esbach's tube with some of the solution (picric acid, 1; citric acid, 2; water, 100 c.c.); set aside, shaking from time to time, and read off the deposit about the fifth or sixth day. By Esbach's process, the total proteids are first ascertained, and by the last experiment, the seralbumin; the difference will be the globulin.

I have examined in the above way the following, which I report here, although not all belonging to the intermittent series:

### 1. Acute Bright's disease, two cases—

			Seralbumin.	Serum globulin.	Average of
a. Total proteids .	0.64	.	0.62	.	0.02
b.       ,,       .	0.17	.	0.14	.	0.01
					} $\frac{\text{Seralbumin}}{\text{Globulin}} = 2.8.$

### 2. Chronic granular kidney, three cases—

			Seralbumin.	Globulin.	Average of
a. Total proteids .	0.1	.	0.077	.	0.023
b.       ,,       .	0.25	.	0.19	.	0.06
c.       ,,       .	0.4	.	0.3	.	0.10
					} $\frac{\text{Seralbumin}}{\text{Ser. globu-}} = 3.1.$ lin

## 3. Amyloid kidney, two cases—

			Seralbumin.		Globulin.	Average of
<i>a.</i>	Total proteids .	0·33	.	0·19	.	0·14
<i>b.</i>	„	1·41	.	0·87	.	0·54
						} $\frac{\text{Seralbumin}}{\text{Globulin}} = 1·5.$

Notwithstanding there was in these cases a high proportion of globulin I am not disposed to agree entirely with Senator that as a rule amyloid disease may be thus distinguished.

I have had a great many cases of remittent albuminuria under my observation, but I am sorry to say that I have found it very difficult to obtain results in my analysis of the albumen precipitates that were at all accurate, owing chiefly to the small amounts present. I have, however, selected five cases in which gravimetric analyses were made in addition to those after the above method.

		Total proteids.		Seralbumin.		Globulin.
1 . . .		0·14	.	0·105	.	0·035
2 . . .		0·08	.	0·07	.	0·01
3 . . .		0·31	.	0·10	.	0·21
4 . . .		0·06	.	0·05	.	0·01
5 . . .		0·11	.	0·088	.	0·022

In only one case did the globulin exceed the seralbumin, while in the remaining four the average of  $\frac{\text{seralbumin}}{\text{globulin}} = 4.$

My results, therefore, agree more or less with those of Paton, but differ from those of Maguire.

The densimetric method of estimating albumen—taking the specific gravity before and after the albumen has been separated by acetic acid and continued boiling, the difference  $\times 400$  = number of grains of albumen in 100 c.c. of urine—although it gives fairly satisfactory results when the albumen is abundant, yet in the cases of intermittent albuminuria in which I tried it I found it useless.

*Nature of the albumen found.*—As to the albumen found in these cases of intermittent albuminuria, I have, as a rule, made no observation unless the amount appeared more than a trace. When a differential analysis was possible I have rarely found seralbumin or globulin present alone, the latter, however, more frequently than the former ; most commonly

the two were present together. Occasionally also these two bodies were associated with albumose, generally in the form of hetero-albumose. I have now and again obtained a precipitate with nitric acid only when a considerable amount of sodium chloride had been added ; but, as a rule, the amounts present have been so small that it was difficult to establish the identity. In three cases, however, I think I have detected proto-albumose. Peptones also have been frequently found, but they are not so often present as used to be described ; they are rarely to be met with alone, but generally with the albumoses.

In all cases in which albumen is found in the urine it is of vital importance to test for it frequently, particularly if the patient is an adult, or has ever suffered from nephritis.

*Results of intermittent albuminuria.*—It is still a question whether disease of the kidney is liable to follow intermittent albuminuria. Although the opinion is held, as has already been stated, that all varieties of functional albuminuria, unless ultimately arrested, result in changes of the renal structure, I am not disposed to think that anything of the kind occurs in the great majority of the cases. But it ought to be remembered that a persistent tendency to the passage of albumen points to some peculiarity in the kidney, possibly of the nature of imperfect and incomplete development ; great care, accordingly, should be exercised in the treatment of such cases, and any discoverable exciting cause should always be avoided and counteracted if possible. I can, however, recall to mind only three cases where intermittent albuminuria preceded kidney disease. One was that of a man (æt. 55) who was suffering from chronic granular kidneys when I first saw him, and who said that albumen had been present in his urine in small amount between the ages of eighteen and twenty-five ; and in a second albuminuric, acute inflammation of the kidneys set in after a slight wetting, from which, however, the subsequent recovery was so complete that no albumen has since been detected in the urine. The third is that of a man (æt. 35) who first came under my notice fifteen years ago with intermittent albuminuria, but no symptoms or signs of kidney disease ; he is now suffering from Bright's disease.



In the majority of the cases, indeed, that have remained for years under inspection, the liability to the passage of albumen in the urine has appeared to diminish. In some the tendency has disappeared entirely, but in many that still continue under observation, slight traces of albumen are frequently to be detected.

*Cases to be regarded with suspicion.*—It would be prudent, therefore, to regard with suspicion—(1) Cases that have been of long duration and are persistent, in which the amount of albumen is considerable, and where there is a personal history of Bright's disease. (2) Where the specific gravity of the twenty-four hours is low, and there is frequent micturition during the night. (3) Where there are tube-casts other than a few hyaline, for while the absence of casts does not imply the absence of renal disease, their presence is always suspicious. (4) Cases with high arterial tension, particularly when associated with hypertrophy or dilatation of the left ventricle, or with retinal changes. (5) Cases occurring after the age of forty, especially if there is any tendency to gout.

## NOTE ON THE KNEE-JERK.

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By C. S. SHERRINGTON, M.D.

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THE knee-jerk is a matter of such general clinical interest, that I venture to give a brief account of the results of some experiments on it which we have been engaged in making in the physiological laboratory of the school. In the monkey the muscles upon which the knee-jerk depends are almost exclusively the *vastus internus* and the internal portion of the *crureus*; the rest of the *crureus* and the external *vastus* contribute very slightly to the extensor spasm which constitutes the "jerk." The *rectus femoris* and other muscles on the front of the thigh do not contribute to it.

It is well known that the "jerk," although its extremely short latent period makes it hard to believe it a reflex, is nevertheless dependent on the integrity of a reflex arc, just as the "tone" of the muscles which the jerk employs is also dependent on the integrity of that arc. This is shown from the fact that section of the sensory spinal roots of the lumbar region destroys the "jerk," just as does section of the motor spinal roots of that region. My experiments show that the sensory root on which the knee-jerk depends is, in the monkey, the fifth lumbar,—that is to say, the fourth lumbar of man; and that two motor roots are concerned in the arc on which the "jerk" and tonus of the *vastus internus* is based, and that these are the fifth lumbar, and, to a less

extent, the fourth (that is to say, the fourth and third lumbar of man).

In these motor roots it is certain only of the motor fibres that are requisite, and these fibres are the fibres which innervate the vastus internus and crureus muscle. So also in the sensory root of the fifth lumbar nerve certain only of the fibres of the root are necessary to the "jerk," and these our experiments trace back to the vastus internus and crureus muscles. Thus the sensory fibres of the reflex arc on which the jerk depends are sensory fibres from those very muscles which actively participate in the jerk.

These sensory fibres are, however, of very different quality from the sensory fibres which exist along with them in the same sensory spinal nerve-root, but carry impulses from the skin, not from muscle. To pass a thread under these sensory fibres from muscle is often sufficient to destroy their conductivity, although it does not destroy or even obviously injure the conductivity of the sensory fibres passing from the skin.

Stimulation of the sensory fibres from the skin, even of those which are contained in the same spinal root with the muscular afferents on which the jerk depends, does not obviously affect the knee-jerk, neither increasing nor diminishing it. Nor does excitation of those sensory fibres from the skin which are contained in the sciatic nerve. But section of the sciatic nerve itself causes *exaggeration* of the knee-jerk. This effect of section of the nerve depends entirely on the section of that part of the sciatic trunk which innervates the hamstring muscles. At first I believed the explanation to be that the section of these nerve-fibres, by abolishing the tonus of the hamstring muscles, leaves the knee mechanically freer to swing under the spasm of the extensors during the jerk. The discovery that the same exaggeration (*i.e.* increased briskness) of the jerk is obtained by dividing simply those sensory roots which contain sensory fibres from the hamstring muscles admits of explanation on the same purely mechanical plan. But the phenomenon is not really explicable mechanically; it is of physiological significance. This is clear from the following facts. If, when the jerk is unduly brisk after section of

the "hamstring" portion of the sciatic nerve, the *central* end of one of the branches of the nerve to the hamstring muscles be stimulated, the jerk then becomes inelicitable; on discontinuing the excitation of the nerve the jerk returns, and is brisker than before. It is not necessary even to do more than, having separated the lower end of one of the hamstring muscles, draw lightly upon it so as to stretch it, or knead it. Either of these mechanical methods is enough to excite the sensory nerves of the muscle and to throw the knee-jerk out of action. On cutting the sensory spinal roots, through which pass the fibres from the muscle, the stretching or the massage of the muscle has no longer any effect upon the knee-jerk.

These observations indicate that when, in order to elicit the knee-jerk, the physician prefers the limb to be so placed that the leg hangs at right angles to the thigh, he, by employing that pose, probably not merely increases the mechanical freedom of the leg at the knee-joint but, further, certainly relieves the knee-jerk from a physiological restraint that tension of the antagonistic muscles (the flexors, hamstrings) habitually impose upon it; and he does this best by passively flexing the knee-joint as fully as possible. The condition of the hamstring muscles influences the jerk, therefore, very greatly. Increase of their tonicity or of their tension diminishes or abolishes the jerk; decrease of their tonicity or of their tension exaggerates the briskness of the jerk.

About the anatomy of the sensory nerve-fibres from muscles we at present, unfortunately, know very little. From observations which I have published elsewhere it seems clear that those for the jerk do not consist of the sensory root-fibres which pass either into the median posterior column (Goll's) or into Clarke's column of cells. From the very much less degree to which they withstand experimental interference than do cutaneous sensory fibres it is not improbable that they are very small fibres, and we know that the sensory roots contain numbers of very small as well as of very large fibres, and that the posterior root ganglia contain, besides large ganglion-cells, many that are only a fourth the size of those.





ON THE RELATION  
OF  
FUNCTION TO STRUCTURE IN THE  
MAMMALIAN HEART.

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BY A. F. STANLEY KENT, M.A. OXON., F.G.S., F.L.S.

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MUCH of our knowledge of the minute structure of the heart dates from the time of Pettigrew,<sup>1</sup> who undertook a series of observations upon the manner of arrangement of the muscular fibres of this organ, and upon the relation of the fibres forming the auricle to the fibres forming the ventricle.

Inasmuch, however, as the examination undertaken by him was by no means as thorough as the more advanced methods of the present time enable us to make it, it is not surprising that important points of structure should have been overlooked and mistakes made.

Pettigrew's examination was made by dissecting the heart, and in order to follow the course of the fibres more easily, recourse was had to the action of heated water; in fact, the hearts were boiled and the fibres afterwards traced by means of forceps and scalpel. And in this way many valuable facts were established, more especially as regards the course of the fibres in the ventricle, which were classified

<sup>1</sup> 'Physiology of the Circulation.'

into numerous layers, the constituent fibres of which are continuous with each other at the apex, and, according to Pettigrew, at the base of the heart also.

And in accordance with this it has been said by Pettigrew that the "fibres of the ventricle as a rule have neither origin nor insertion."<sup>1</sup>

But if this is the case it is obvious that the fibres forming the ventricle can have no connection with the fibres forming the auricle; and, indeed, it has been stated by Pettigrew that in boiled hearts the auricles may be separated from the ventricles without rupturing a single fibre; and other writers have gone even further than this, and have described as existing between the muscular tissue of the auricle and that of the ventricle a distinct gap—a separation effected by "a considerable amount of connective tissue at the auriculo-ventricular junction."<sup>2</sup>

But if the facts of the case are as stated above, and the muscular tissue of the auricle is completely separated by connective tissue from the muscular tissue of the ventricle, the question arises, "How is the wave of contraction, which starts at the origin of the great veins and is propagated over the auricle, enabled to pass over the connective tissue at the auriculo-ventricular junction; or, if it does not pass over this connective tissue, how is the ventricular contraction initiated and made to follow in due sequence upon the contraction of the auricle?" In the case of cold-blooded animals the case is simple, as no such mass of connective tissue exists, but the muscular tissue of the auricle is continuous with that of the ventricle, and the explanation is the same as the explanation of the passage of a wave of contraction along any other continuous stretch of muscular tissue. In the case of the mammal, on the other hand, no such explanation is admissible, as we are confronted by a distinct break in the muscular continuity, a mass of connective tissue over which it is impossible to conceive of the wave of contraction passing.

Accordingly it has been supposed that the breach of continuity is bridged over by a series of nervous channels, along

<sup>1</sup> 'Physiology of the Circulation,' p. 192.

<sup>2</sup> MacWilliam, 'Journal of Physiology,' ix, 187.

which impulses pass and result in the initiation of a contraction of the ventricular muscle ; and the co-ordination between the auricular and ventricular beats has been supposed to be due to the action of nerve-cells lying in the substance of the heart. It can, however, be shown that the ganglia are unnecessary to the proper action of the heart, and experiments have been made which seem to prove that the nerves also are by no means indispensable to such action.

A variety of other theories have been put forward, but in the case of none of them can it be said that a satisfactory explanation of all the facts has been given. It has been supposed that ventricular contraction is initiated by the sudden rise of blood-pressure coincident with the contraction of the auricles, but to this it may be objected that in a heart containing no blood the same sequence is observed, and experiments have been made in which the auricle was separated from the ventricle by cutting through the auriculo-ventricular junction, whilst precautions were taken to keep the parts in apposition and prevent any interference with the normal changes of intra-cardiac pressure. In these experiments it was found that the sequence of ventricular upon auricular beat was no longer preserved, but the ventricle commenced to beat with a rhythm of its own. And in the case of those theories which seek to find in the electrical variation of the auricle, or the mechanical pulling upon the chordæ tendineæ by the contraction of the muscular fibres of the auriculo-ventricular valves, an efficient cause for the sequent contraction of the ventricle, equally grave objections exist which may be urged against them.

And contrasting the beautifully simple explanation, which is amply sufficient to explain the phenomena in the hearts of cold-blooded animals, with the complicated theories above mentioned, which have been put forward to afford a like explanation of the phenomena in the case of mammals, and having in view the single supposed fact which rendered these theories necessary, it seemed to me worth while to make a careful examination of the details of structure actually existing at the auriculo-ventricular junction in the heart of the mammal. The following are the



results of such examination, and the modifications which the new facts will necessitate in our conception of the passage of the wave of contraction over the auriculo-ventricular groove. Moreover, these results tend to throw light upon the action of various drugs upon the heart, and render possible an explanation of the facts observed in the hearts of animals other than adult, and in the hearts of adult animals under various artificial conditions. Thus we are concerned not only with the physiology, but also with the pathology of the heart.

For the sake of the convenience of working with small hearts, and on the supposition that the structure would be at all events approximately the same through the whole class of the mammalia, my first experiments were made upon the hearts of rats, and the observations were afterwards controlled by experiments made upon the hearts of animals higher in the scale, such as guinea-pigs, hedgehogs, rabbits, cats, dogs, and finally monkeys; and inasmuch as from embryological considerations it was reasonable to suppose that a time must exist at which the primitive continuity of the tissue of the tube forming the heart became separated into two portions, one forming the auricle and the other forming the ventricle (supposing such separation to exist in the adult heart), such a stage was anxiously looked for as being likely to afford an example (rare in physiology) of an organ suddenly undergoing a change of structure which could not but profoundly modify the details of its function.

But though much time was spent and much labour devoted to the search, the examination was carried out upon hearts in all stages right up into that of adult life without any stage being found in which the auricular muscular fibres became distinct from the ventricular fibres; but, on the contrary, in all cases the older idea was found to be entirely erroneous, and a complete muscular continuity could be proved to exist between the two chambers of the heart. So important did this fact appear, that the examination was at once extended to the hearts of other animals, and more especially was attention paid to animals comparatively high in the scale.

And at once another important fact became apparent.

Not only was it soon found that a continuity did exist between the muscular tissue of the two chambers of the heart in the higher animals, but it was observed that this connection varied in completeness in the various animals, and, as a general rule, became less complete the higher the place occupied by the animal in the scale. For instance, whilst in the adult rat the muscular connection is very apparent, and consists of bundles of muscular fibres running through the junction from auricle to ventricle without very much modification of the tissue forming the bridge, in the case of the monkey the connection is of a different character, and consists of peculiarly modified muscular fibres lying in the fibrous tissue of the auriculo-ventricular groove.

And even in the rat it is seen that although in tracing the growth of the heart up from the embryonic to the adult condition no stage can be observed in which a definite separation of the muscular tissue forming the ventricle from that forming the auricle occurs, yet a change in the manner, and more particularly in the amount of connection does take place; and in the adult, instead of the large masses of fibres sweeping freely through from auricle to ventricle, a much narrower band is present to form the connecting bridge.

The modifications that occur in animals higher in the scale are as follows:

At the same time that a change is taking place in the amount of the muscular tissue forming the bridge between auricle and ventricle, a change is taking place in the character of the fibres which enter into the composition of this bridge. For instead of consisting of muscle-fibres like those existing in the auricle and ventricle, the cells are seen to become peculiarly modified, and to take on the form of elements which are, as a rule, fusiform, and which, if traced along their course, are seen to swell out to about the size of an ordinary fibre, to contract again to extremely fine threads, to branch, and finally to become connected to the branches of other similar cells. In many places the cells bear a striking resemblance to the cells composing non-striated muscular tissue, but an essential difference can always be made out even in the very finest threads,

inasmuch as the transverse striation is plainly visible. In the monkey it is particularly well seen that these fibres run through the fibrous tissue forming the "ring" at the auriculo-ventricular junction, and that the total sectional area of the muscular tissue is inconsiderable when compared with the total sectional area of the fibrous tissue. Moreover, the bundles of muscular tissue of the auricle upon approaching the auriculo-ventricular junction are seen to break up into stellate masses, the rays of which become connected with the peculiar fibres above described as existing in the fibrous tissue of the junction; and, on the other hand, the masses of muscular tissue of the ventricle on approaching the junction become collected into leashes of very fine fibres, which run for a variable distance into the fibrous tissue, and finally become connected with the modified cells of the groove, just as do the auricular fibres.

Thus it is seen that there exists between the auricle and ventricle a network of peculiarly modified muscular cells which permeates the fibrous connective tissue of the groove; and that this network is connected with the muscular tissue forming the walls of the auricle on the one hand, and with the muscular tissue forming the walls of the ventricle on the other. And in consequence of this the old idea of the complete absence of muscular continuity between the auricles and ventricles of the mammalian heart is seen to be without foundation, since such a continuity has now been proved to exist.

It is scarcely necessary to point out that the above facts must exert a profound influence upon our conception of the method of transmission of the wave of contraction across the auriculo-ventricular groove, inasmuch as the views that have hitherto been held have been grounded upon what we now know to be the erroneous supposition that the auricle and ventricle were (so far as muscular tissue is concerned) anatomically distinct from one another.

Whilst these views were held it was necessary to suppose that the ventricular contraction was initiated by some impulses passing over the junction by some path other than a muscular one, and, in consequence, nervous agency amongst others was called in to afford the requisite explanation. But, as above

stated, there are very grave objections to the theories that have been put forward, and, moreover, these theories are now unnecessary, inasmuch as the phenomena in the case of the mammal's heart are upon exactly the same footing as the phenomena in the case of the heart of cold-blooded animals, and therefore we are justified in supposing that the explanation is the same in the two cases.

In the case of the heart of cold-blooded animals, the explanation universally accepted is that the transmission of the wave of contraction across the auriculo-ventricular groove is of exactly similar nature to the transmission of a wave of contraction along any other continuous tract of muscular tissue. In the case of the mammal then it is merely necessary to suppose that the conduction of the wave of contraction across the auriculo-ventricular groove is of exactly the same nature as the conduction of a wave of contraction along any other continuous stretch of muscular tissue.

We are, however, here met by a difficulty, for whereas in most such stretches of muscular tissue the wave of contraction passes along with uniform velocity, in the case of the heart a distinct pause occurs at the moment that the contraction reaches the auriculo-ventricular junction, and any theory that is put forward to explain the conduction as of a purely muscular nature should account also for such pause. And it is not difficult to furnish an explanation.

For it will be remembered that the muscular tissue at the groove was described as being of a nature different from ordinary cardiac muscular tissue, inasmuch as the muscular fibres are in places very much attenuated, and strongly resemble non-stripped muscle. Moreover, the fibres are arranged as a branching network. It has been proved by Romanes in the case of *Medusæ* that the rate of conduction varies directly as the sectional area of the conducting path, and we know that the rate of conduction in the case of non-stripped muscle is less than in the case of striped muscle. It is therefore reasonable to suppose that in the case of the muscular tissue at the groove, where we have a distinct variation in the direction of non-stripped muscle and a distinct and very considerable diminution of the sectional area, we should find a corresponding diminution in the rate



of transmission of the impulse ; and a variety of experiments have been made which tend to show that by artificial means a condition can be brought about in a continuous stretch of muscular tissue which very closely resembles the condition naturally existing at the groove. The artificial interference referred to consists in gradually lessening the sectional area of the muscular tissue at a given point by a cut which nearly, but not quite, divides the mass of tissue into two parts, the narrow bridge left being the only path by which waves of contraction started at one end of the mass can pass to the portion on the other side of the cut.

Under these circumstances it is seen that the wave of contraction passes along the muscular tissue as far as the bridge, that a pause then occurs, and afterwards the tissue on the other side of the bridge contracts. By narrowing the bridge a state of things may be obtained in which not every, but every other contraction is able to overcome the resistance at this point, and by still further narrowing it the impulse is prevented altogether from crossing from one part of the tissue to the other. It is seen, therefore, that by narrowing the sectional area of a tissue whose conductivity is naturally good, a condition of things may be obtained in which every impulse arriving at the point operated upon is delayed in transmission, and by still further narrowing the bridge every other contraction is absolutely prevented from crossing.

Just so in the heart. Under normal circumstances every wave of contraction is delayed on arriving at the auriculo-ventricular junction, and it appears reasonable to suppose that this delay is due to the narrowing of the conducting path by the breaking up of the auricular muscle into the network of fine fibres above described, and to the lowering of the conductivity of these fibres consequent upon their modification in the direction of non-striped muscle.

In the same way in a heart the vitality of which is declining, it may often be observed that not every but every other wave of contraction initiated at the venous end passes over the auricle and is able to give rise to a contraction of the ventricle ; and it has been seen that exactly such a condition may be induced in a continuous stretch of

muscular tissue by narrowing the sectional area at a given point. In the one instance it is a case of narrowing the sectional area of a tissue the conductivity of which is high, in the other of lowering the vitality of a tissue the sectional area of which is already somewhat small.

Moreover it is found that in the heart, under certain conditions, it is possible to reverse the normal sequence, and instead of a beat of the ventricle following a beat of the auricle the beat starts in the ventricle, reaches the groove, passes over it, and initiates a beat in the auricle. This reversed beat has been obtained in the hearts of various animals, and I have found no difficulty in producing it by passing induction shocks into the ventricle at a rate slightly greater than the normal rate of the heart's rhythm, or by passing the induction shocks at any desired rate into the ventricle of a heart inhibited by *vagus* stimulation. These results are readily enough to be explained if the conducting apparatus is muscular in nature, but many difficulties are in the way if the apparatus be supposed to be nervous.

A study of the hearts of young animals affords some interesting results.

It is well known that in young animals the heart will continue to beat for a much longer period after death than is the case with adult animals; and in adult animals, if we carefully examine a heart in which the normal beats have just ceased to pass over the ventricles, it will be noticed that although the heart as a whole has ceased to pulsate, yet certain parts of it are still in action and beating almost as vigorously as ever. The parts referred to are the auricles, and close examination will show that the impulse starts, as usual, at the origin of the great veins, passes over the auricular muscle and reaches the groove, where, instead of inducing a ventricular contraction, its strength seems to die out, and it appears to be unable to cross the bridge of tissue connecting the auricle to the ventricle. In adult hearts, therefore, it is rather a failure of the contraction to be conducted over the heart from auricle to ventricle than any failure of the initiation of the beat in the venous end of the heart, and the difference between the adult and young heart is a difference of conduction rather than a difference in the

initiation of the beat. If then the beat is readily conveyed over the auriculo-ventricular junction in the case of young hearts whose vitality is declining, and is blocked in the case of adult hearts in similar circumstances, and if, as has been shown, the sectional area of the connecting muscular tissue in the case of young animals is greater than in the case of adults, it is reasonable to suppose that the superior conductivity in the case of young animals is due to the greater sectional area of this connecting bridge, and similarly that the low conductivity in the case of adult hearts is due to the narrowness of this connecting bridge and the lowering of the conductivity of the fibres remaining by their differentiation in the direction of non-striped muscle.

A similar difference between young and adult hearts may be observed in the case of chloroform poisoning.

I have constantly found that in the case of young animals it is far more difficult to produce death by chloroform inhalation than in the case of adults, and in animals newly born or only a few days old, this is carried to such an extent that a prolonged sojourn under a bell-jar with an excess of chloroform seems to exercise a comparatively slight effect upon the normal condition of the animal, which appears almost as lively as before, and is certainly keenly conscious of painful sensations. The heart continues to beat, and altogether the animal is but very slightly affected by a set of conditions that would speedily result in the death of an adult. A very similar thing is observed when a pregnant animal is made to inhale chloroform. After actual poisoning and death of the mother, upon opening the uterus it will be found that the fœtus is quite unaffected, though it must have been exposed to the influence of a considerable amount of chloroform circulating in the blood of the mother. In these cases the animal, as a whole, seems especially resistant to the action of the drug, and it is not necessary to call in structural points to explain the resistance, as probably it depends upon fundamental differences in the tissues of the different animals. It is, however, of interest to note that in the case of the organ with which we are more especially dealing at present, it is in the young animal, *i. e.* the one in which the muscular connection between auricles and ventricles is most

perfect and undifferentiated, and therefore in which the conductivity is highest, that we find the greatest resistance to the action of the drug ; and in older animals, where the muscular continuity is less perfect, and the conductivity therefore lower, that we find a stoppage of the heart occurring as a result, direct or indirect, of chloroform inhalation.

### CONCLUSIONS.

The conclusions that may be drawn from the above research are the following :

1. The well-marked separation between the auricles and ventricles of the mammalian heart which has so often been described has no real existence, but, on the other hand, the muscular fibres of the auricle are connected with the muscular fibres of the ventricle, both directly and by means of peculiarly modified muscle-cells lying in the connective tissue of the auriculo-ventricular groove.

2. The wave of contraction is conducted from the auricle to the ventricle in the same manner as the wave of contraction is conducted along any other continuous stretch of muscular tissue. A similar explanation of the conduction from ventricle to auricle holds good.

3. The muscular connection between auricle and ventricle is of greater sectional area in young animals than in adults. Probably connected with this is the fact that after systemic death the heart of a young animal will continue to beat for a considerably longer time than will the heart of an adult.

4. The pause observed when the wave of contraction passing over the heart reaches the auriculo-ventricular junction is probably due to a lessening of the sectional area and a modification in the conducting power of the muscular tissue existing at this point.



## DESCRIPTION OF PLATE IV.

Illustrating Mr. Kent's paper "On the Relation of Function to Structure in the Mammalian Heart."

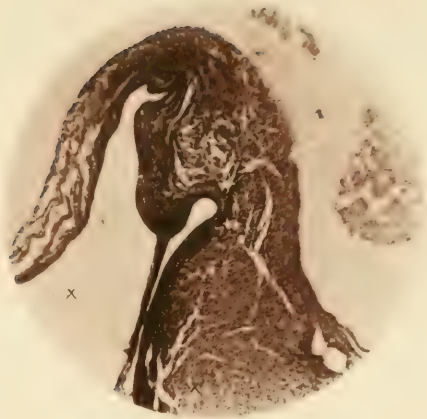
[The figures are reproduced from untouched negatives of the specimens.]

FIG. 1.—Section through heart of adult rat. The lower mass of muscular tissue is the wall separating the two ventricles; the upper mass is the wall separating the two auricles. On the left is seen one of the flaps of the mitral valve. The auricular muscular tissue is seen to pass without interruption into the ventricular wall.  $\times 50$ .

FIG. 2.—Section through junction of auricle and ventricle. Heart of adult rat. The auricular fibres are seen to pass without interruption into the ventricular wall. The magnification being greater than in Fig. 1 it is possible to follow individual fibres from auricle to ventricle.  $\times 100$ .

FIG. 3.—Section through fibrous connective-tissue "ring" at junction of auricle and ventricle. Heart of adult monkey. The branched muscle-cells lying in the fibrous tissue are well seen. Towards the auricular end one or two of the elongated fusiform cells are present, and under the microscope these may be seen to be connected with the auricular muscle.  $\times 100$ .

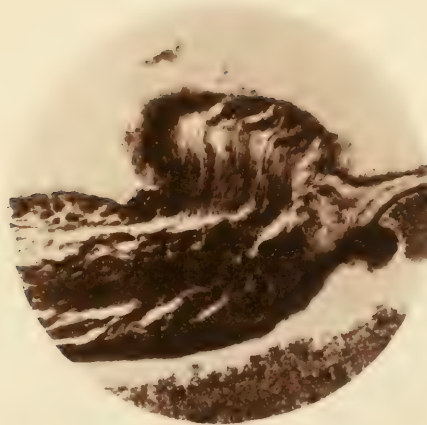
Fig. 1.



*Auricle*  
*Cavity of L. Auricle.*

*Ventricle.*

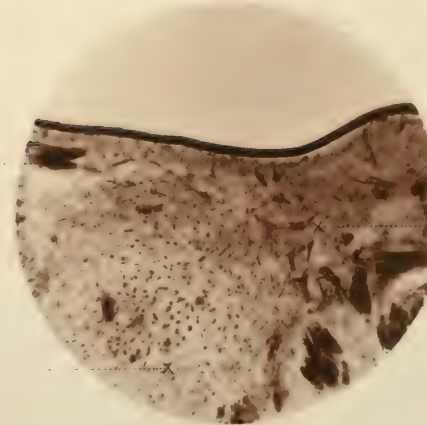
Fig. 2.



*Auricle*

*Ventricle.*

Fig. 3.



*Auricular muscle.*

*Fibrous tissue.*

*Branched muscular  
Fibres lying in  
Fibrous tissue*

*Ventricular muscle*



# SIXTY-TWO STONE CASES TREATED BY LITHOTRITY.

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IT was primarily intended that this paper should set forth the superiority of lithotritry over all other operations for the removal of stone in the great majority of cases of vesical calculus. It was intended to compare the results of fifty consecutive lithotritries with those of fifty lithotomies to give the comparative results at different ages, with different sizes and characters of stones, and in different conditions of the urinary organs. The idea was to show that in my experience simple lithotritry was the best operation, and supra-pubic lithotomy the worst, in 90 per cent. of all cases of stone in the bladder, and that the remaining 10 per cent. were best treated by perinæal lithotritry.

It is very difficult, however, for a writer to ensure that the impression he conveys is the one he is justified in conveying; standing as he does with an object in view, he will surely do his best to attain that object, and the bias which has led him to his own conclusions will give a character to his statements, rendering their real value very difficult for the reader to estimate. Any attempts made to draw conclusions from statistics are, moreover, almost entirely vitiated by the many elements of the calculation which are incapable of being calculated. I have decided, therefore, to give a simple and complete list of all lithotritries performed by me



in the hospital since the beginning of 1892, to refer briefly to some of the unknown quantities which render comparisons and conclusions impossible, and to leave my readers complete freedom to make any comparisons and to draw any conclusions for themselves.

The first and most important of these unknowns to which I would refer are racial differences. I, after nine years' acquaintance with Orientals as existing in Egypt, am convinced that deductions drawn from Oriental experience, be they in chloroform or in cholera, in sanitation or in stone, are almost valueless when applied to Europeans. It has often seemed to me that the Oriental (and here let me say that my statements refer chiefly to the lower class Egyptian), while presenting great resistance to the invasion of disease, offers very little to its progress.

His cuticle, corporeal and mental, has been thickened by generations of hardship and oppression; to him exposure to great changes of temperature, to privations, to unsanitary conditions, and to the many forms of virus which surround him, have become as natural and as supportable as misgovernment, ignorance, and slavery. Once penetrate this cuticle, however, his first and only real line of defence, and there is but very little resistance behind. The black man, when he has once thoroughly realised the hopeless misery of his condition, makes up his mind to die and dies; once a local tubercular lesion has started in a Nubian, general tuberculosis follows with incredible rapidity; the Egyptian, when once any septic mischief is set up, may be looked upon as lost, acute pneumonia is as fatal to him as typhus is to Europeans. The cuticle of the mucous tracts is as resistant as that of the skin.

Oriental hospitality is famed, but certainly in Egypt it is most remarkable as extended to parasites; 90 per cent. of the subjects in the post-mortem rooms present parasitic worms, 85 per cent. of the cases under treatment in Dr. Sandwith's medical general ward one day last summer were suffering from ankylostomiasis, two out of every three patients that came to the surgical wards show the results of the Bilharzia worms in their urinary apparatus. And yet this mass of parasites is tolerated with the greatest equanimity, and their

ravages are for a long time limited by the resistant mucous membrane. One variety of them, however, the ankylostoma, sufficiently armed as it is readily to pierce the duodenal mucous membrane, becomes rapidly accompanied by pronounced anæmia.

The *Bilharzia hæmatobia* comfortably ensconced in the portal viens and its branches distributes millions of embryos, the which taking up their abode chiefly in the mucous membranes of the genito-urinary tract, produce changes in that tract from the glomeruli of the urinary tubules to the remnant of a foreskin, sufficient to put nine out of ten Europeans similarly affected entirely *hors de combat*. Interstitial nephritis, nephritic abscess, pyelitis, dilated calices, ureters finger thick, bladders with mucous membrane entirely replaced by layers half an inch thick of embryos, cystitis of every intensity, urethras absolutely impassable, urinary fistulæ ten or twenty in number, calculi everywhere, such are common, aye very common, experiences of the clinic and of the post-mortem room, and incredible as it may seem, the subjects of these outrageous lesions may follow their occupations with energy and contentment quite up to the usual Egyptian standard. It is no exaggeration to say that an Egyptian with sufficient disease in his urinary tract to be fatal to any European may carry on his bodily functions in such a way as to maintain practically perfect general health. Inside his urinary tract all may be hopelessly and utterly diseased, while his general system may remain for an indefinite period unappreciably affected.

And here again, a very important point presses for consideration. The Oriental cannot entirely do without a urinary system, but I am convinced that it is a less important item in his economy than in that of an Occidental. I am not aware of any statistics bearing on the point, but I am sure that metabolic changes are much more thoroughly carried out in tropical and subtropical countries, and that the residues of such changes are less complex in structure, and are more easily evacuated by tissues other than renal, than they are in higher latitudes. The metabolic changes proceed more uniformly; there is much less storage either of fatty, potential, or of effete material; there is less ten-

dency to hibernation and its necessary accumulations ; there are more frequent fever storms and consequent clearances. The second great unknown arises from the probable difference in causation of stone in Egypt and in Europe. In all cases the origin of most acid stones is obscure, but in Egypt a factor, of perhaps very great importance, is introduced by the universal dissemination of the Bilharzia parasite. The eggs of this parasite have been considered by many authorities to be the principal cause of the frequency of stone in Egypt, and unquestionably these eggs are to be found in the nucleus of many calculi. A third unknown quantity is introduced by the difference of the surroundings in which operative treatment is carried out. In Cairo the hospital wards lay open to every wind, day and night, during the summer, and for the greater part of the day during the winter. Practically for three quarters of the year the patients are treated in the open air. Taking into consideration these three unknowns only, and ignoring the many minor factors, such as the absence of mental emotion and of shock, the diet and habits of the patients, the out-of-door life usually led, it becomes evidently impossible to apportion a true value to the following table of lithotrities, which, remarkable at first sight, loses when critically looked at all value as a basis for conclusions.

No.	Age.	Nature of stone.	Weight in grammes	Approx. weight.		Result.	Observations.
				Oz.	Drms.		
1	25	Urates	148.0	5	1	Cured	Removed per peri- næum.
2	21	Urates and cystine	5.0	—	1	"	
3	60	Urates	15.0	—	4	"	
4	40	"	57.0	2	—	"	
5	35	Phosphate of lime	3.5	—	1	"	
6	40	Oxalates	7.5	—	2	"	
7	30	"	13.0	—	3½	"	
8	30	Phosphates and oxalates	85.0	3	½	"	
9	27	"	4.5	—	1	"	
10	40	"	12.0	—	3	"	
11	38	Phosphates and urates	3.5	—	1	"	
12	60	"	13.5	—	3½	"	
13	40	"	19.0	—	6	"	
14	70	"	10.0	—	3	"	
15	30	"	22.0	—	6½	"	
16	45	"	2.0	—	1	"	

No.	Age.	Nature of stone.	Weight in grammes	Approx. weight.		Result.	Observations.
				Oz.	Drms.		
17	25	Phosphates and urates	25·0	—	7	Cured	Removed per perinæum.
18	60	„	5·0	—	1	„	
19	35	„	4·50	—	1	„	
20	85	„	62·0	2	1	„	
21	16	„	60·0	2	—	„	
22	25	„	40·0	1	3½	„	
23	35	Phosph., urates, oxalates	5·0	—	1	„	
24	45	Phosphates	2·30	—	$\frac{3}{8}$	„	
25	38	Oxalates	12·0	—	3	„	
26	12	Phosphates	12·0	—	3	„	
27	30	Phosphates and oxalates	12·0	—	3	„	Old age. Stones in both kidneys; purulent cystitis. Removed per perinæum.
28	35	Phosphates and urates	18·0	—	5	„	
29	40	„	19·0	—	6	„	
30	18	Oxalates and urates	5·0	—	1	„	
31	19	Phosphates and urates	30·0	1	—	„	
32	12	„	21·0	—	6	„	
33	35	Phosphates	22·5	—	6½	„	
34	24	Oxalates	32·0	1	1	„	
35	45	Phosphates and urates	4·0	—	1	„	
36	35	Phosphates	43·0	1	4	„	
37	80	Phosphates and urates	43·0	1	4	Died	Removed per perinæum.
38	14	„	93·0	3	2	Cured	
39	45	Phosphates	65·0	2	2	„	
40	30	Phosphates and urates	9·0	—	3	„	
41	28	„	52·0	1	7	„	
42	60	„	5·0	—	1	„	
43	45	Oxalates	3·0	—	1	„	
44	45	Urates, oxalates, phosph.	97·0	3	3	„	
45	28	„	13·0	—	4	„	
46	30	Phosphates	30·0	1	—	„	
47	33	„	25·0	—	7	„	Removed per perinæum.
48	33	Oxalates and phosphates	15·0	—	4	„	
49	9	Urates, oxalates, phosph.	32·0	1	1	„	
50	23	Phosphates	45·0	1	4	„	
51	23	„	4·0	—	1	„	
52	25	Urates and phosphates	33·0	1	1	„	
53	35	„	0·34	—	$\frac{1}{12}$	„	
54	40	Phosphates	40·0	1	3	„	
55	75	Urates and phosphates	25·0	—	7	„	
56	40	„	5·0	—	1	„	
57	65	Phosphates and oxalates	41·0	1	3	„	
58	35	Phosphates	55·0	1	7	„	
59	45	Phosph., oxalates, urates	48·0	1	5	„	
60	40	Phosphates and oxalates	2·5	—	$\frac{1}{2}$	„	
61	40	Urates and phosphates	8·0	—	2	„	
62	40	Phosphates	35·0	1	1	„	



## ANALYSIS.

1. *Ages of Patients.*

Age.	No. of cases.		Observations.
0—9	...	1	Cured.
10—19	...	6	"
20—29	...	11	"
30—39	...	18	"
40—49	...	53	"
50—59	...	0	"
60—69	...	5	"
70—79	...	2	"
80—89	...	2	1 died.

2. *Dividing into the three Periods of Life.*

*Youth* 1—30.    *Full Manhood* 30—60.    *Old Age* 60—90.

Age.	No. of cases.		Observations.
1—29	...	18	Cured.
30—59	...	33	"
60—90	...	9	1 died.

3. *Showing size of Stone.*

Size.	No. of cases.		Observations.
Up to $\frac{1}{2}$ oz.	...	30	Cured.
Over $\frac{1}{2}$ oz. up to 1 oz.	...	11	Cured.
Over 1 oz. up to 2 oz.	...	15	14 cured, 1 died; 2 cured cases removed by perinæal lithotrity.
Over 2 oz. up to 3 oz.	...	2	Cured.
Over 3 oz. up to 4 oz.	...	3	Cured; 2 removed by perinæal lithotrity, 1 by simple lithotrity.
Over 5 oz. up to 6 oz.	...	1	Cured; removed by perinæum.

A few words are necessary as regards the above list. It includes all the lithotrities done by me at the hospital since the beginning of 1892 up to to-day with two exceptions. One of these was performed during 1892, and a stone weighing 85 grammes successfully extracted. The bladder having been thoroughly washed out of *débris*, a stone was still to be felt on the right side of the abdomen. After many ineffectual attempts to seize the stone, an examination *per rectum* showed it to be lodged in the right ureter. A

perinæal incision was made, the stone grasped, and found to be immovable. An incision was made in the stone, and the mictural entrance into the bladder enlarged sufficiently to permit the removal of a calculus weighing nine grammes, with a very marked neck where it had been gripped by the mouth of the ureter. The patient survived nineteen days, and on post-mortem examination stones and pus were found in both kidneys.

The fatal result in this case can hardly be put down to the lithotrity, and therefore I have omitted it from the list. The other case was one in which I had intended to perform lithotrity, but being called away from the operating room before any instrument was introduced, I left an assistant to wash out the bladder. On my return I found that this procedure had been attended with great loss of blood, and discovered on examination that the bladder had been pierced. I performed supra-pubic cystotomy and removed the stone, and found a rent in the posterior wall of the bladder. The patient was suffering from offensive cystitis before the operation, and acute peritonitis ensued with fatal result. The first case of the list, although not performed in hospital, is added as being by far the largest I have ever removed by the perinæum.



# EIGHT CASES OF ABDOMINAL SURGERY.

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By EWEN C. STABB.

RESIDENT ASSISTANT SURGEON.

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MY best thanks are due to the surgeons of St. Thomas's Hospital, who so kindly afforded me the opportunity, not only of operating upon these cases, but also of following them to their termination. I have no original remarks to make, but hope that the cases may prove of sufficient interest in themselves to be worthy of a record in the Hospital Reports.

CASE 1. *Acute intestinal obstruction ; abdominal section ; strangulation by Meckel's diverticulum, which was removed ; recovery.*—Henry M—, æt. 9, admitted September 2nd, 1892, under the care of Dr. Ord. Patient had always been weakly, and had suffered from bronchitis off and on for several years, but had never had any abdominal trouble ; bowels always regular. Five days before admission he was suddenly seized with violent abdominal pain, which made him scream ; he vomited frequently at night, sleeping only for very short periods at a time.

Poultices were applied, and liniments rubbed in without any good effect. Next day opening medicine was given without result ; the vomiting persisted, and he returned immediately the iced soda and milk with which he was fed ; the pain, however, was diminished. During the next two days the symptoms were unchanged, and on the fourth day enemata of warm water and castor oil were administered without effect. He became light-headed at times, and craved for

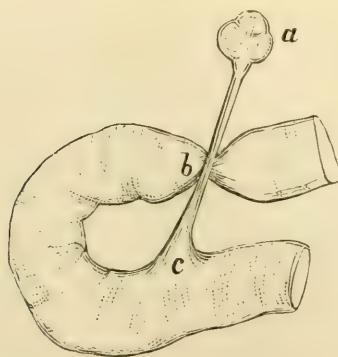


drink, which he immediately vomited. Urine was very scanty. A morphia injection induced sleep for the first time for four nights. On the fifth day the vomit was described to be like a diarrhoea stool, and the patient was brought to hospital.

*On admission.*—A much emaciated boy, vomiting frequently large quantities of a dark brown fæculent fluid and complaining of intense abdominal pain. Complete obstruction for five days. Abdomen moderately distended and its walls rigid and motionless. Resonance all over. Bronchitic signs in lungs. Cough frequent, and expectoration purulent. Temperature  $98.8^{\circ}$ ; pulse 120. Patient wandering at intervals.

In the absence of Dr. Ord the patient was seen by Dr. Hadden, who advised exploration. Chloroform was given and a median incision made below the umbilicus. The intestines appeared healthy, and on introducing a finger into the abdominal cavity, a tense rounded cord was discovered, passing from the right iliac region to the umbilicus.

FIG. 1.



*a.* Blind bulbous end of diverticulum.      *b.* Seat of constriction.  
*c.* Origin of diverticulum from intestine.

On further examination this proved to be a diverticulum from a coil of small intestine close to the cæcum, which was tightly compressing the same coil about nine inches higher up (Fig. 1). At the constricted spot the intestine was greatly

narrowed, being about the size of a No. 16 catheter, and white and cicatricial in appearance. There were no signs of inflammation. The wound was now enlarged upwards as high as the left side of the umbilicus, and the upper end of the diverticulum dissected out. It was found to terminate in a dilated blind end, lobulated, and about the size of a large cherry. A clamp was now lightly applied to the lower end of the diverticulum, which was then cut off about  $1\frac{1}{4}$  inches from its attachment to the bowel. After washing out the lumen, the cut extremity was inverted by means of a row of Lembert's sutures of fine silk passed through the peritoneal coat, which was supplemented by a second row causing more inversion. The inverted portion could now be felt just entering the lumen of the bowel.

The abdominal wound was closed with a fine continuous silk suture in the peritoneum, and interrupted sutures of the same material in the abdominal wall.

The patient stood the operation, which lasted about forty minutes, well. During the night his cough was very troublesome, preventing sleep in spite of a hypodermic injection of morphia. He passed flatus twice, and vomited several times, as a result of the anæsthetic.

The abdominal pain had quite ceased since the operation. Three days later, coarse crepitations were heard all over the left lung, and next day the temperature, which had been normal since the operation, rose to  $103^{\circ}$  on one occasion, and the expectoration was streaked with blood. The temperature remained up for three days, and then fell to normal again, and the chest symptoms improved very gradually.

The dressings were removed for the first time on the eighth day. The incision had healed by first intention, but a drop of pus could be squeezed out of each stitch hole, and from the lower end of the incision, spreading towards the left groin, was an indefinite subcutaneous swelling, into which a small incision was made, and pus evacuated. An enema of eight ounces of olive oil was given on this day, but returned without result, so small doses of castor oil in mixture were ordered every two hours, and the bowels well opened after five doses, containing half an ounce of oil altogether.

The evacuation was large and well formed. Subsequently to this the bowels acted naturally and with fair regularity.

The suppuration about the suture tracks cleared up after the discharge of part of the silk suture used to unite the peritoneum.

The patient left hospital for a convalescent home forty-five days after operation, wearing a light abdominal belt. The incision was well and firmly healed, and the boy had grown quite fat.

The patient is now, five months after operation, in very good health in every respect. There is no tendency to hernial protrusion at the scar, and the chest signs are reported to have cleared up.

The boy is so improved in general health, as hardly to be recognised as the patient of five months ago. Bowels act regularly, and without any trouble.

An interesting feature in this case was the acute onset of symptoms of obstruction; yet from the condition of the intestine where compressed by the diverticulum the obstruction must have existed for some considerable time, and nothing could be felt within the bowel above the constriction to account for the sudden appearance of symptoms. Immediately the constriction was relieved, the intestinal contents passed on through the narrowed portion of the gut. The diverticulum removed in this case will be found in the museum of the hospital.

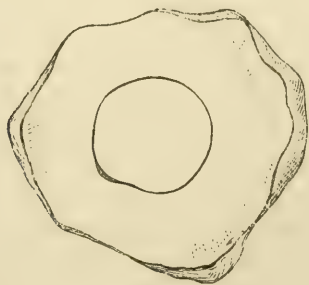
*CASE 2. Acute intestinal obstruction; abdominal section; small bowel found strangulated through an aperture in the mesentery; death.*—Sarah E—, æt. 38, married. Admitted January 4th, 1893, under the care of Dr. Sharkey.

Patient had always suffered from constipation, and much more so for the last few months; otherwise she had enjoyed good health. No history of any abdominal injury. Eleven days before admission she was seized with severe abdominal pain, which lasted for five days and then ceased; vomiting now set in, evidently from the description stercoraceous. She was treated with enemata without any result, there being complete obstruction since the first accession of pain.

*On admission* patient was in a collapsed state, extremities very cold, temperature  $96.2^{\circ}$ .

She vomited almost incessantly small quantities of a dark brown faecal-smelling fluid. The abdomen was distended, but not tense, and there was no pain. No signs of fluid in the abdominal cavity. Rectum empty and ballooned. In the absence of Dr. Sharkey, the patient was seen by Dr. Hawkins, who considered an operation necessary. Shortly afterwards chloroform was given and a median incision made below the umbilicus. The abdominal walls contained a thick layer of fat. The large intestine was found collapsed from the sigmoid to the cæcum. The coils of small intestine on the surface were moderately distended, but on displacing these to the left side, a bunch of collapsed bowel was found in the right iliac region, and on gently bringing this to the surface, a portion slipped out of a hole in the mesentery. On examining the collapsed intestine, which was about the size of the little finger, four constrictions were found in it, two close together near the cæcum, and two others also close together and about five feet from the first pair. The coats of the bowel were intact, and the constrictions had evidently not been very tight. Here and there on the collapsed bowel were patches of adherent lymph.

FIG. 2.



The mesentery presented a circular hole (Fig. 2) with clean cut edges about  $\frac{5}{8}$  of an inch in diameter, situated about midway between its root and intestinal margin, and about



3 inches from the cæcum. A small calcareous nodule was situated in the mesentery close to the edge of the perforation, and a second one, the size of a split-pea, some inch nearer the intestine. The mesentery appeared well supplied with blood-vessels, one running within  $\frac{1}{8}$  of an inch from the margin of the aperture. A circular incision was made in the mesentery surrounding the perforation about  $\frac{1}{4}$  of an inch from its edge, a ring of mesentery being thus excised.

In doing this five small arteries had to be ligatured. The edges of this now enlarged hole were sutured by a continuous Lembert's suture of silk uniting the peritoneum on each surface of the mesentery. The abdominal wound was now closed by three sets of sutures, continuous catgut in the peritoneum, silk Lembert's in the aponeurosis, and finally silk-worm gut uniting the skin and subcutaneous structures. Cyanide dressings were applied. The patient did not appear to suffer from the operation, which lasted about half an hour. On returning to the ward, however, she became very restless indeed, and commenced to vomit the same offensive fluid. She was given brandy *per rectum*, and by subcutaneous injection; her collapsed state and extremely cold extremities prevented the administration of morphia. In spite of every effort to prevent it, she gradually became colder and colder, and died from collapse eight hours after operation.

At the post-mortem examination nothing more was found. The collapsed portion of bowel had remained so, except at the upper part, which had become distended for a few inches below the highest constrictions. On measuring the bowel, the first constriction was found to be 30 inches from the cæcum, and the second 5 inches further away; the loop of bowel between these points was slightly congested only, and the mesentery in a line joining these two constrictions showed signs of having been nipped. The third constriction was situated 64, and the fourth 74 inches from the cæcum. The intestine and mesentery here again presented the same appearances as at the lower constricted portion. The collapsed intestine, therefore, measured altogether about 6 feet, and it readily transmitted a good stream of water. No other abnormalities were found in the mesentery. The

kidneys were large, soft and congested, weighing  $7\frac{1}{2}$  ounces each ; the capsules were adherent. No urine had been procurable during life. An examination other than of the abdomen was not permitted by the relatives.

The long period of complete obstruction (11 days), together with the history of previous difficulty with the bowels, and the ballooned condition of the rectum, seemed to point rather to obstruction in the upper part of the rectum or sigmoid ; on the other hand, the absence of any considerable distension, the persistent vomiting, and character of the fluid vomited, rather indicated some lesion in the small bowel. As nothing could be made out *per rectum*, it was thought wise to make a median incision, which would have greatly facilitated the performance of an inguinal colotomy had the obstruction been found sufficiently low down.

The aperture in the mesentery corresponded in position and character to that described by Mr. Treves as being of congenital origin, besides which there was no ascertainable history of injury, and the circular shape of the aperture would not be in favour of a traumatic origin. It is worthy of note in this case that two separate coils of intestine at a distance of 20 inches apart should have been together strangulated through the same opening. The portion of mesentery containing the perforation is preserved in the museum of the hospital.

CASE 3. *Acute intestinal obstruction ; abdominal section ; large pedunculated fibroid with twisted pedicle ; removal ; recovery.*—Elizabeth B—, æt. 46, single. Admitted May 19th, 1892, under the care of Dr. Payne.

There was no history of previous trouble, except a very short attack of pain and nausea some two months ago, and the patient was not aware of the presence of an abdominal tumour, though she had noticed a gradual enlargement of her abdomen for two years, which she attributed to getting fat. The present attack came on while dancing rather energetically at 2 a.m., when she was suddenly seized with violent abdominal pain and uncontrollable vomiting. Throughout that day she remained in the same condition,

and was brought to hospital at 8 p.m., eighteen hours after the commencement of symptoms.

*On admission* the patient lay curled up on her left side with the thighs flexed strongly ; she was constantly groaning with acute pain in the abdomen, which was considerably distended, marked by lineæ albicantes, and presented very much the appearance of pregnancy in a late stage. On palpation, a hard, smooth, slightly movable mass could be felt, with its long axis directed obliquely from the right iliac fossa upwards and to the left, reaching to the costal margin. This tumour occupied the whole abdomen, except a small portion on the right side above. Flanks resonant. *Per rectum*, nothing definite could be made out ; os uteri soft, and dilated sufficiently to admit the finger. Temp.  $97.8^{\circ}$ . Pulse 90 and weak. General condition fairly good. Bowels last opened two days before admission. Shortly after her arrival at the hospital she was seen by Dr. Payne, who considered surgical measures to be necessary. Ether was administered, and a small median incision made below the umbilicus in order to explore the tumour, which proved to be a very hard uterine fibroid, free from adhesions, oval in shape, and about ten inches in its longest, and eight inches in its shortest diameter. Before this tumour could be brought outside the abdominal cavity, the incision had to be extended from the pubes up to the ensiform cartilage, and even this aperture was only just large enough with considerable stretching of the parts. The pedicle was about the size of the wrist, and in appearance resembled a very large umbilical cord ; but absolutely black in colour. The tumour had completely rotated once upon its own vertical axis, to the right side, thus giving the spiral appearance to the pedicle, which sprang from the left side of the fundus of the uterus and the left broad ligament. The recto-uterine folds and broad ligaments were very tense, the former dragging the rectum to the left side. The whole pelvic floor was raised and thrown into tense black folds, radiating from the pedicle, which when untwisted opened out into a thick flattened band ; this was ligatured in two portions close to the uterus, and the tumour removed, together with the left ovary. Two small

pedunculated fibroids were also ligatured and removed, one the size of a Tangerine orange, the other of a cherry-stone. The right ovary was small and cicatricial; it presented a few cysts. There was no peritonitis except just in the region of the pedicle. The pelvis contained several ounces of blood-stained serum. The intestines were collapsed, and occupied the upper part of the abdominal cavity. The incision was closed by a continuous suture of fine silk in the peritoneum, and interrupted silk sutures uniting the aponeurosis and superficial structures. A glass drainage-tube was inserted at the lower end of the incision, reaching into the pelvis, and dressings of cyanide gauze were applied. During the operation patient became collapsed, and was given 5 minims of *Liq. Strychninæ* hypodermically, and when in bed a brandy enema, and  $\frac{1}{4}$  of a grain of morphia. On section the tumour proved to be a very hard fibroid, weighing about 10 pounds. All pain and vomiting ceased after the operation, and patient slept that night and most of the next day. For the first forty-eight hours there was a considerable amount of blood-stained serous discharge from the pelvis. The drainage-tube was removed on the fourth day, and some of the sutures, the others being left for another four days. The wound healed by first intention, except where the tube had been, and here some superficial suppuration occurred. The bowels were opened by enema on the fourth day. The temperature, on one or two occasions only, rose above 99°. A light abdominal belt was ordered, and patient left the hospital quite well thirty-four days after the operation. The wound was firmly healed, and without any tendency to protrusion. When last seen, seven months later, she was perfectly well, and following her usual occupation as a housekeeper. A small hernia had developed at the lower limit of the scar where the tube had originally been, but this gave no trouble, and was easily controlled by the belt.

Intestinal obstruction produced as in this case, is extremely rare, as are pedunculated subperitoneal fibroids of such a size. It is remarkable that a tumour as big as the one removed should have existed so long without causing any symptoms, and unknown to its possessor. The sym-

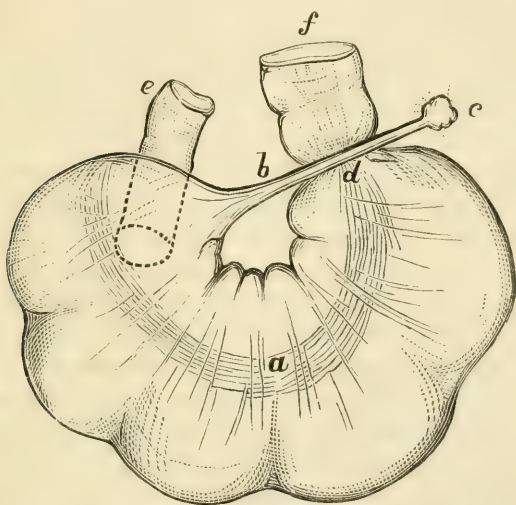


ptoms of obstruction were very acute, and would appear to have been produced by the dragging upon the rectum, caused by the twisted pedicle, for from the oval shape of the tumour, rotation upon its long axis could not produce any appreciable difference in its direct pressure-effects upon the intestines, and from its very dense fibrous structure no sudden increase in size could have taken place. The large oval abdominal tumour, associated with the soft and considerably dilated os uteri and acute abdominal pain, so deceived a medical man who examined the patient as to cause him to diagnose labour as being imminent, and to make hasty preparations for the event.

CASE 4. *Acute intestinal obstruction taking place in an old umbilical hernia ; cæcum strangulated by vermiform appendix and gangrenous ; enterectomy and artificial anus ; recovery ; subsequent circular enterorrhaphy ; death.*—Jane C—, æt. 58, married, 18 children. The hernia was first noticed twenty-five years ago, when it was very small, but it has gradually increased in size with each confinement, and has always caused a slight dragging pain, but never any obstruction. For several days before admission the hernia had increased in size, and become very painful and red, and for two days the patient had been frequently sick, the vomit being described as very offensive. The bowels were last open two days before admission. Patient was a well nourished woman, admitted in a state of collapse, and presenting an umbilical hernia about the size of a football, resonant all over, very tense, red, and shining, and giving the impression that it contained pus. The umbilicus was situated over the centre of the tumour and almost obliterated by stretching. She frequently vomited most offensive fluid in small quantities. Soon after admission ether was given and the hernia laid open. The sac proved to be loculated, consisting of two main cavities, one containing nearly the whole of the small intestine, moderately distended only, and quite healthy ; the other and smaller compartment contained the cæcum, with the termination of the ileum and the greater part of the colon, together with much matted omentum. The colon and omentum were very adherent to the sac, but the small

intestine only slightly so, at one or two places. The cæcum and commencement of the colon lay in the right side of the sac, presenting a curve to the right with the concavity looking upwards. From near the apex of the

FIG. 3.



*a.* Commencement of colon. *b.* Vermiform appendix. *c.* Umbilicus.  
*d.* Seat of constriction. *e.* Lower end of ileum. *f.* Ascending colon.

cæcum the vermiform appendix stretched to the left towards the inner surface of the umbilicus, where it was firmly adherent, passing in its course tightly over the commencement of the ascending colon, which it constricted (Fig. 3). The strangulated portion of intestine was greatly distended, black in colour, and gangrenous in places, devoid of polish, and very offensive in odour. On relieving the constriction the intestine proved to have lost all resilience. There was no constriction at the neck of the sac, which was about  $3\frac{1}{2}$  inches in diameter, and after separating the adhesions all round, the small intestine and greater part of the large were with difficulty reduced into the abdominal cavity and retained there by means of a flat sponge. The lower end of the ileum, close to its entrance into the cæcum, was included in an intestinal clamp (Mr. Makins'), and similarly

the ascending colon above the constricted part, and the gangrenous portion of intestine, about ten inches, removed. As the condition of the patient was very unsatisfactory, no attempt was made to unite the cut ends of intestine, but an artificial anus was formed. The greater portion of the sac was dissected away, also a large amount of thinned, blue, redundant skin, and the wound united with a continuous suture, the two cut ends of the bowel being brought out and united to the skin at the lower end of the incision, their margins having first been sutured together for about half their circumference. For several days after the operation the patient remained in a very feeble condition; a large quantity of fluid fæcal matter escaped from the artificial anus. Subsequent to this the progress was most satisfactory, except for some localised suppuration taking place, apparently in connection with portions of the sac which had not been removed. There were never any signs of peritonitis, and the patient took her nourishment well. Nutrient suppositories were introduced into the ascending colon through the artificial anus, with the idea of keeping it functionally active, and so minimising any contraction from disuse.

Three months after the first operation, all the conditions being apparently most favourable and the patient very anxious for closure of the artificial anus, a second operation was performed with that object. An incision was made, surrounding the ends of the intestine and prolonged in the median line for a couple of inches above and below. The two portions of intestine were then separated from each other and from the adjacent structures. A small collection of pus was found surrounding the large bowel, which necessitated removal of a longer portion of this than would otherwise have been the case. Both ends of the now freed intestine were clamped some six inches from their free ends, and about four inches removed from the large, and two or three from the small intestine. It was now seen that the lumen of the large intestine had so contracted during the previous three months as to be only about half the diameter of the small, which was normal in size. The freshly cut ends of intestine were now joined by a row of closely-

applied sutures, uniting the free edges of the mucous coats, and tied in the lumen of the bowel all round, except the last one or two, which had of necessity to be tied outside. The serous coats were brought together by a close row of Lembert's sutures, and finally a few others were similarly inserted in order to take off any tension from the previous row. Fine silk was used throughout. Several tags of omentum were stitched round the line of junction, and the intestine was then returned just within the abdominal cavity. What remained of the hernial sac was cut away, and the aperture in the abdominal wall closed by means of four Lembert's sutures of thick silk, except at the lowest part, where a small glass drainage-tube was inserted. The skin was united by a continuous silk suture, and cyanide dressings were applied.

The operation lasted one and a quarter hours, and the patient became considerably collapsed at its termination, and never completely recovered. She was kept under the influence of morphia, and fed *per rectum*.

On the following day the only unfavorable sign was a very weak pulse; but on the evening of the second day she vomited, and on removing the dressings the abdomen was found considerably distended. No flatus having passed since the operation, the condition suggested obstruction at the seat of suture, which proved to be correct. A small quantity of chloroform was given, the wound reopened, and the sutured portion of intestine brought outside the abdominal cavity, an incision nearly through the right rectus muscle having to be made in order to accomplish this, owing to considerable matting having taken place all round in that vicinity. The upper portion of bowel was much distended, and the lower contracted and empty. Gentle manipulation failed to remove the obstruction, so a longitudinal incision was made through the distended bowel, close above the obstruction, and a finger introduced discovered a valvular obstruction, produced by œdematous inverted edges of sutured bowel; this was rapidly overcome by gentle pressure, the lumen at the sutured spot admitting the finger with ease. In order to guard against a recurrence of the obstruction, a short piece of drainage-tube,



half an inch in diameter, was introduced into the lumen of the bowel and passed through the obstruction, and fixed there by means of a stitch, uniting it to the free edge of inverted intestine. The incision in the bowel was closed by a row of Lembert's sutures, and the whole returned into the abdomen. All symptoms of obstruction ceased, but the patient never recovered from the shock, and died sixteen hours later. At the post-mortem examination the abdominal cavity was found perfectly clean, and the sutured portion of bowel in good condition, all the stitches holding well, with no tendency to cut through; and no leakage took place under a strong pressure of water. On laying open the bowel, and removing the tube fixed there, the inverted portion was seen as a complete circular ledge half an inch wide, projecting into the lumen. The sutures in the mucous coat were still holding well, and all looked perfectly healthy. The sutured portion is preserved in the hospital museum, as is also the cæcum removed at the first operation.

The unfortunate termination of this case is much to be regretted, especially as the performance of the second operation was not necessary to life. It, however, shows very clearly that in the anxiety to bring sufficient of the peritoneal surfaces of the intestine into contact, too much may be inverted into the lumen of the bowel, and thus produce obstruction, especially, as in this case, where the two ends of intestine are of unequal size. If there is any doubt about the lumen remaining patent, it would be wise to fix a short piece of large-sized rubber tube in the bowel at the seat of suture, by a single stitch uniting it to the free edges of inverted intestine. This would prevent obstruction, and in a few days, when the inflammatory swelling and œdema had disappeared, the stitch would have cut through, and the tube be set free in the bowel, to be subsequently evacuated.

CASE 5. *Strangulated inguinal hernia; gangrenous intestine; resection and circular enterorrhaphy; recovery.*—Edward J—, æt. 53, grocer. Admitted September 2nd, 1892, under the care of Sir William MacCormac. Patient was not aware that he had a rupture, and there was no history

of previous abdominal trouble, but he had always suffered from obstinate constipation, the bowels seldom being moved more often than once in a week or ten days, and on several occasions he has gone as long as a month. His general health had apparently not suffered.

This patient was sent to hospital supposed to be suffering from peritonitis, no cause having been detected. Three days before admission, shortly after a meal, he was suddenly seized, while out walking, with severe pain in the abdomen. He managed to walk home, and then lay down, but the pain increased, and he thought he could walk it off, so went out again, but was obliged by pain to give up the attempt. On returning home he vomited, and all that night suffered a great deal of pain, which increased next day, and as vomiting commenced immediately food was taken he starved himself. The pain ceased on the third day. Bowels were opened last shortly before onset of symptoms, but he had no pain at the time, nor did he strain more than usual.

When admitted patient was in a collapsed condition, with subnormal temperature and small thready pulse. Eyes much sunken and tongue dry and brown. The abdomen was moderately distended and motionless; the peristaltic action of the intestines could be seen. In the region of the right external abdominal ring was a rounded, not very tense swelling about the size of a walnut. No impulse on coughing. Ether was given, and the usual oblique incision made over the hernia. The elements of the cord were found spread out over the sac, which was only moderately tense. On opening it some half an ounce of dark fluid escaped, and at the bottom was a knuckle of black intestine devoid of polish, and with gangrenous smell. The stricture was very tight, but after notching it the coil of intestine was readily drawn out, exposing the constrictions. At these points the gut was grey and very thin in its whole circumference; at one spot only the peritoneal coat remained. The condition of the patient being fairly good, it was decided to resect the gangrenous portion of intestine; accordingly some six inches of healthy bowel on each side of the gangrenous portion were drawn out and laid upon a warm flat sponge, one of Mr. Makins' intestinal clamps

being put on each end of the loop. Four inches of bowel were now excised, including about one inch of healthy intestine on each side of the gangrenous piece. The mesentery was cut as close to the bowel as possible, and none removed. Several small vessels in the cut edges of bowel and mesentery were now secured with fine silk, and the open ends of the intestine syringed out with boracic lotion. The first ring of sutures uniting the ends was passed through the edges of the mucous coat, the stitches, about one-eighth of an inch apart, commencing opposite the mesenteric attachment, and being tied tightly within the lumen of the bowel, except the last two or three, which had, of course, to be tied outside. The clamps were now removed, and immediately gas and fluid contents of bowel passed through the sutured portion, which did not allow of any escape. A row of Lembert's sutures was now passed through the peritoneal coat, it being also the intention to include some at least of the muscular coat. This row was also closely applied, but not tied so tightly as those in the mucous edges in order to avoid cutting through. Several more Lembert's sutures were then passed here and there round the circumference to take off tension from the previous row. All sutures were of fine silk, passed with straight round needles. The redundant mesentery, corresponding to the piece of intestine removed, was puckered up into a bunch by means of a silk suture threaded through it, and the mass thus formed united to the bowel by several sutures, thus forming a good pad over that section of the sutured portion.

The bowel was now returned just within the internal ring, and in order to do this the opening had to be slightly enlarged. The sac was dissected up and cut off, a small rubber drainage-tube introduced just within the abdominal cavity in case there should be any leakage, and the pillars of the external ring united with a couple of Lembert's sutures of silk, leaving only room for the tube. The skin was united with a continuous suture, and a cyanide dressing applied.

The piece of resected intestine is in the museum of the hospital.

September 3rd (day after operation).—Abdominal distension almost disappeared. No pain nor sickness since the operation. Temperature 100°. Teaspoonfuls of brandy and water were allowed, altogether about four ounces during the day, and patient was kept under the influence of morphia, but as he did not sleep 60 grains of sulphonal were given with good effect.

4th.—Much improved. Temperature normal. Valentine's meat juice (3j every six hours), was added to the brandy and water, and half a pint of arrowroot given during the day. Nutrient suppositories were ordered every six hours, and the patient still kept under morphia, sulphonal being again given at night. Patient passed flatus for the first time.

6th.—Dressing removed and tube changed for a smaller and shorter one. Sutures taken out, the wound having completely healed. Abdomen flat and moving well with respiration. A pint of milk and an egg were added to the previous allowance. Patient took his food with great relish. The morphia was discontinued but the sulphonal again repeated.

9th.—The tube was discontinued to-day, and the bowels acted well after a simple enema of one pint.

10th.—Ordered a drachm of olive oil by mouth every hour during the day, and this was increased to two drachms on the 12th, when the bowels were again opened by enema. On 14th the dose of oil was increased to half an ounce and on 15th to an ounce every hour. On 16th an enema had again to be given to open the bowels, but on 17th and 18th they were for the first time well opened as the result of the oil, and subsequently to this the oil was only given two or three times a day. While taking the oil, which he did not dislike, patient put on flesh rapidly. There was no tendency to protrusion at the scar, but patient was for safety ordered a light truss, with which he left the hospital for a convalescent home on October 8th, thirty-six days after operation. When last seen, some three months later, he expressed himself as never having felt so well in his life, and his bowels were more regular than they were before the operation.



The circular (end to end) method of suture of intestine without any plates, rings, or other apparatus (if not always the best method of intestinal suture) is very suitable to such a case as the above; the length of intestine exposed need only be small, and the sutured portion can easily be returned into the abdominal cavity through a small opening, which would not be the case if Senn's plates were used. Even when there is some difference in size, as long as it is not very great, between the two ends to be sutured, as in this case, the apparent difficulty disappears after the insertion of the first row of sutures in the mucous coat, in such a way that the stitches are slightly wider apart in the larger end. It is an advantage to tie these sutures tightly, the free mucous edges then pouting immediately, and filling up most effectively the spaces between the stitches, thus preventing any escape between the peritoneal surfaces, the sutures in which should be tied loosely, so as to avoid cutting through and to interfere as little as possible with the circulation. The introduction of a third row is probably unnecessary, and certainly dangerous in some instances, from too great inversion and blocking up of the lumen of the bowel, as in Case 4.

The usual purgatives were avoided here in opening the bowels for the first time, for fear of setting up too violent peristalsis and disturbing adhesions. Olive oil given in frequently repeated small doses produces no ill effect even in obstruction, and if it can be taken without causing sickness, acts as a good food, as well as a harmless and mild aperient.

CASE 6. *Gastric ulcer; perforation; abdominal section; ulcer sutured; death from collapse.*—Benjamin G—, æt. 44, dustman. Admitted May 14th, 1892, under the care of Dr. Payne. The patient was a very powerful healthy-looking man, above the average height; he stated that he had never in his life had an ache or pain anywhere. He had evidently not had any gastric symptoms, and on the day of admission had eaten a hearty breakfast as usual. His habits were decidedly alcoholic, usually drinking several half-pints of beer in the course of the morning.

About two hours previous to admission he was following his occupation as a dustman, and in the course of his round went into a public-house and ordered half a pint of ale, which he drank, and immediately after was seized with severe abdominal pain and vomiting. He was taken home at once, where he continued to vomit, and as the pain increased he was brought to the hospital.

When admitted he lay on his back with the knees drawn up, abdomen considerably distended, its walls very rigid and motionless ; the slightest pressure caused intense pain ; temp.  $97.8^{\circ}$ , pulse 88 and fairly strong. He retched occasionally, but did not bring up anything. In the absence of Dr. Payne the patient was seen by Dr. Acland, who considered surgical interference necessary. The patient, however, absolutely refused to submit to an exploration, and his wife urged him in the same direction. He gradually became more collapsed, and seven hours after admission, in spite of his wife's threats, he was at last persuaded by his priest to submit to the only chance of saving his life, though little hope was now offered.

Ether was given, and a central incision made below the umbilicus. On opening the peritoneum the distended intestines prolapsed to a considerable extent, and it was next to impossible to control them, as the patient took the anæsthetic so badly, and never ceased straining throughout the operation, becoming blue and almost pulseless if the anæsthetic was pushed. Chloroform was tried with no better result. The peritoneal cavity contained some pint or so of sour fluid, smelling strongly of beer, and evidently being stomach contents. Nothing wrong being made out in the lower regions of the abdomen, the incision was prolonged up to the ensiform cartilage, and the stomach drawn down as much as possible and examined. Its anterior surface revealed nothing. The exposure of the posterior surface was extremely difficult to accomplish. A longitudinal opening was made in the great omentum without any bleeding, extending from the greater curvature of the stomach to the transverse colon. Through this a finger detected a small, hard, ring-like mass on the posterior surface of the stomach, close to the lesser curvature, and about midway

between the cardia and pylorus. This was exposed by twisting the stomach upon a transverse axis, and at the same time drawing the greater curvature upwards. The ring-like mass proved to be the thickened edge of an ulcer, the base of which was formed by the peritoneal coat only of the stomach, and this was perforated in the centre. Four Lembert's sutures of fine silk were inserted, so as to bring healthy peritoneal surfaces of stomach, beyond the ulcer, into contact. The peritoneal cavity was well flushed with warm boracic solution, and then sponged out. A glass drainage-tube was inserted at the upper part of the wound into the lesser sac, the incision sutured in the usual manner, and cyanide dressings applied. The operation lasted about one and a quarter hours, but most of the time was occupied in holding the abdominal contents in place during the violent straining and coughing. Patient was no worse apparently for the operation, and even seemed to rally a little, but he relapsed again, and died in sixteen hours. He was fed with nutrient suppositories and enemata. The temperature varied between  $97^{\circ}$  and  $98^{\circ}$ .

At the post-mortem examination the peritoneal cavity was found to be quite clean, and no leakage had taken place, the sutures in the stomach holding well. Some recent lymph was found behind the stomach, but none on the intestines, which were healthy. The stomach was distended. On its posterior wall, close to the lesser curvature and two and a-half inches from the pylorus, was an ulcer measuring three quarters of an inch by half an inch, with well-defined edges slooping down to the floor, which was formed of peritoneum only, and perforated in the centre. The other organs were normal.

An interesting feature in this case was the entire absence of symptoms previous to perforation, as considering the size of the ulcer, and the amount of thickening of its edges, this must have been present for some time. Such symptoms as the patient presented on admission could only point to perforation of some part of the gastro-intestinal tract. There being no previous history of any abdominal trouble, and no localising symptoms present, it was considered advisable to make a median incision.

If any case could be considered favorable for operation, this should have been one, and had the patient submitted to operation as urged on admission, his chances must have been much improved. The great difficulty met with in the operation was in obtaining sufficiently free access to the posterior surface of the stomach, and, although the ulcer was so near to the lesser curvature, it was impossible to get at it through the gastro-hepatic omentum. As far as could be judged from the symptoms after operation, and from the post-mortem evidence, this patient died from shock only.

*CASE 7. Perforative appendicitis; general suppurative peritonitis; abdominal section; removal of appendix; recovery.*—Albert F—, æt. 16, shoemaker. Admitted March 19th, 1892, under the care of Dr. Payne. Some three weeks previous to admission this patient first complained of pain in the right side of his lower abdomen, but took little notice of this. A fortnight later he commenced to suffer from diarrhœa, which he attributed to a pork chop eaten the day before, and was treated for this, attending his business all the while, though feeling very ill, and having to leave off before the end of the day on several occasions.

Three days before admission he was helping to lift a heavy piano, when he felt a sudden pain in his abdomen, which gradually increased. The diarrhœa ceased on this day. He ate some fish for supper, after which he commenced to vomit, and this continued all night, with severe abdominal pain. He remained in much the same condition till brought to hospital. Several enemata had been administered shortly before.

Mr. Treves had seen the patient on the day of admission, and advised immediate removal to a hospital. On admission the patient was somewhat collapsed; he lay with his thighs flexed on his abdomen, which was moderately distended, very rigid, and tender. Tongue dry and brown. Pulse 90 and fairly strong. Temperature subnormal.

Soon after admission chloroform was administered, and an incision made in the lower part of the right semilunar line. On opening the peritonæum offensive sero-pus escaped, and on enlarging the wound the general peritoneal cavity



was found to be involved, and the intestines to be covered here and there with adherent lymph. In the pelvis was a collection of foetid fluid. On displacing the coils of small intestine from the right iliac region, the cæcum was exposed, situated higher than usual, and nearly surrounded by black gangrenous tissue and very offensive pus. The vermiform appendix lay behind and on the outer side of the cæcum and ascending colon. In order to expose it, the incision had to be enlarged up to the costal margin. The appendix could now be seen in its whole extent, lying in the bottom of a sloughy cavity and nearly ulcerated through close to its cæcal attachment, while its free extremity reached up to the under surface of the liver, which was covered with whitish lymph. A small hard faecal mass was found lying close outside the appendix. Owing to its gangrenous condition, the appendix was with difficulty freed without tearing it. A silk ligature tied round it about half an inch from the cæcum, and two and a half inches cut off. It was impossible to attempt to form peritoneal flaps, or to invert the cut end. The abdominal cavity was now thoroughly irrigated with boracic solution, a large quantity of dirty-looking lymph and pus escaping from every quarter.

A large glass drainage-tube was inserted down to the region of the stump of the appendix, and the wound closed with silk sutures passed through the whole thickness of the abdominal wall. The operation had to be concluded very quickly owing to the collapsed condition of the patient. For the next four or five days he remained in a very weak state, but there was no sickness nor abdominal pain, and he took a fair quantity of fluid nourishment. Nutrient enemata were also given. The discharge from the tube was copious and offensive. Small doses of morphia were given hypodermically night and morning. The bowels acted naturally on the fifth day, and were fairly regular afterwards. The edges of the wound, which had looked healthy up to the fourth day, then showed signs of sloughing, and the sutures were cutting through, consequent upon considerable abdominal distension and a bad cough, which put much strain upon them. The wound gaped to such an

extent as to expose coils of matted intestine over an area quite the size of an open hand. The matting, however, prevented any considerable prolapse. A week after the first operation, as the discharge seemed to collect in the right loin, a little chloroform was given, and an opening made for drainage in a dependent position, well back in the right loin, just above the iliac crest, and a tube introduced right through from the abdominal incision. After this the patient made rapid progress, the abdominal wound and exposed intestines becoming covered with healthy granulations after the separation of several sloughs. All attempts to bring the edges of the wound together by means of strapping proved futile. Three weeks after admission the bowels gave some trouble, and could not be opened in spite of several purges. The boy did not seem so well, his tongue becoming dry and cracked, and he lost his usually good appetite. The abdomen, which had been quite flat and soft, became distended, tense, and tender, and the wound gaped more than ever. Some dulness was made out in the lower part of the left side of the abdomen. *Per rectum* a tense apparently fluid swelling was discovered in the mid line, pressing backwards upon the rectum and occluding it. Chloroform was given, and a small incision made in the left semilunar line low down, and a large intra-peritoneal abscess opened, which contained about two pints of the most offensive pus. The cavity occupied the whole of the pelvis and extended up into the left iliac region. A glass drainage-tube was put in, and changed in a few days for one of rubber, which was gradually shortened as the abscess cavity contracted. After this abscess had been opened the bowels again acted naturally, and the boy's recovery was uninterrupted but slow. A month later (seven weeks after operation), however, some distinctly faecal matter escaped from the opening in the loin for two or three days and then ceased. The abdominal wound very gradually contracted, and healed by granulation, leaving a thin white scar. Throughout this case there was nothing worthy of note in the temperature, which was usually sub-normal, though occasionally as high as  $101^{\circ}$ . Patient left hospital for a convalescent home four months after admission,

all wounds being firmly healed. A light abdominal belt was supplied, as there was a tendency to protrusion at the scar in the abdomen. When last seen, ten months after operation, he was in good health, and able to do his work, and to enjoy such violent exercise as rowing. The abdominal scar had still more contracted, and the tendency to weakness there was much diminished. The appendix is preserved in the hospital museum. The early history of this case would suggest a perforative appendicitis, with localised intra-peritoneal abscess, which burst into the general peritoneal cavity owing to breaking through of some of the surrounding adhesions, probably when lifting the piano. The incision was made in the right iliac region on account of the history of previous trouble there, though when admitted it was evident that the general peritoneal cavity was involved, and there were no localising symptoms. The collapsed condition of the patient prevented any prolonged operation, otherwise more complete irrigation and a drainage-tube on the opposite side of the abdomen might have prevented the formation of the residual abscess there which so retarded the convalescence. Had there not been such extensive matting together of intestines, there would probably have been a large uncontrollable prolapse from the gaping wound.

CASE 8. *Acute intestinal obstruction ; abdominal section ; stricture of rectum discovered ; left inguinal colotomy ; death.* — Julia S—, æt. 45, married, two children. Admitted September 9th, 1892, under the care of Dr. Harley. The only history of previous illness was ten years ago, when she was laid up for three weeks in bed with some form of pelvic inflammation, attributed to cold after a confinement.

For three months before admission patient had suffered from constipation, her bowels never acting without purgatives, and then defæcation was accompanied by much pain. She noticed that the motions gradually became smaller in size. For fourteen days she had vomited after almost everything she took, and the vomit was described as dark brown and offensive. A few days later severe



gripping pains commenced, and she suffered much from flatulent distension of the abdomen. For nine days obstruction had been complete. The patient was a short, thick-necked, very obese, and evidently alcoholic woman, admitting to habits of intemperance. Abdomen much distended, but lax and soft, with slight dulness in the flanks, but otherwise resonant. Fluid thrill obtained. Rectum very capacious, but empty. She vomited frequently light-brown stercoraceous fluid, and complained of slight pain only. Temperature  $100\cdot2^{\circ}$ . Pulse 104, thin and compressible. In the absence of Dr. Harley the patient was seen by Dr. Hawkins, who considered an exploration necessary. On the following day patient's condition was unaltered, and permission was only then given for an operation. Chloroform was administered, and a median incision made below the umbilicus, cutting through a layer of fat three inches in thickness. Almost a pint of clear serous fluid escaped from the peritoneal cavity. The intestines, large and small, were distended, but the rectum was collapsed. At about the level of the pelvic brim an annular thickening could be made out in the rectum, above which was the greatly distended sigmoid. Both ovaries were adherent, the right to the bottom of Douglas' pouch, and the left just to the left side of the rectum. Left inguinal colotomy was determined upon, and the usual incision made, aided by the left hand introduced into the abdominal cavity. The cut edges of peritoneum and skin were united together, and the upper part of the sigmoid flexure brought out and fixed in position by means of a glass rod passed through its mesentery, and resting upon the abdominal walls at right angles to the skin incision. A few silk sutures were passed, fixing the sigmoid to the edges of the wound. The central abdominal incision was sewn up. In order to relieve the distension a trocar and cannula were passed into the sigmoid, and gas and fluid fæcal matter allowed to escape, the puncture then being closed by a couple of Lembert's sutures. On returning to bed patient became very noisy and violent, requiring several persons to restrain her. As the pulse was good, an injection of rather less than one-fourth of a grain of morphia was given. A few minutes



later she vomited violently, and almost immediately ceased to breathe.

Artificial respiration and restoratives were used without effect. At the post mortem an early annular stricture about half an inch wide was found at the junction of the rectum and sigmoid ; here the lumen did not quite admit the little finger tip. Attached to the lower edge of the stricture was a small mucous polyp. Microscopic examination proved the growth to be a columnar epithelioma, with an unusually large proportion of fibrous tissue. A complete post-mortem was not allowed by the relatives.

In all cases like the preceding one and Case 2, where the cause of the obstruction is not certain, it is always best to make a central abdominal incision. The diagnosis is then easily completed, with very little additional risk to the patient, if due care and antiseptic precautions are taken. Should a colotomy be necessary it can be performed in about half the time it otherwise would occupy, by cutting down upon the left hand, introduced into the abdominal cavity, and the most suitable portion of the bowel can be readily selected for fixing in the wound.

## CONTRIBUTIONS FROM THE DENTAL DEPARTMENT.

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BY C. E. TRUMAN.

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### *Two Cases of Epulis which came away entire, attached to the Teeth.*

A YOUNG woman was sent to the dental department with an epulis on the lingual side of the lower jaw. The labial side of the jaw was not implicated. This growth was about the size of a walnut, very vascular, and bleeding at the slightest touch ; the surface was cauliflower in appearance, and lately had grown rapidly. Apparently it was attached, its whole length, to the gum. The teeth were not pushed out of position by the growth, but the left canine and lateral incisor were loosened. My opinion was that it would be best to take out the lateral incisor and canine at once, and then wait some little time to see if a further operation would become necessary. I did not then and there extract the teeth, as I thought the surgeon wished the case to remain as it was until he had seen it again, but the afternoon of the same day, first the lateral incisor, and then the canine were extracted, and the entire growth came away with the canine, attached to the tooth. The accompanying plate shows the epulis growing from the upper part of the fang of the canine tooth, surrounding its neck, and growing

from the peridental membrane. "The submucous fibrous tissue, or the soft tissue contained in the Haversian canals of the bone, usually affords the site of the disease, which in its growth carries before it the superjacent mucous membrane" (Tomes' 'Dental Surgery.')

The second case was sent to me by Mr. Pitts. This was also the case of a young woman, F—, æt. 20. About three or four months before the patient came to the hospital, she had observed a small oval tumour growing from the inside of her lower jaw at the bicuspid teeth on the right side. She had had very little pain or bleeding from the surface of the growth.

On examination at the dental department, a fibrous growth, about three quarters of an inch in length by half an inch broad, was found growing by the inside of the first and second bicuspid on the right side. The epulis was hard and mammilated on the surface, with but little hæmorrhage on manipulation. Both the bicuspid were loose, and as the growth sprang away from the portion of the jaw formed by their sockets, it was impossible to say which was the most at fault. The one which was the most loose, and which seemed to be the cause, was extracted. The next week, when the patient came again, the extraction of this tooth was found to have produced no effect upon the epulis, so the other bicuspid was at once extracted, and the growth came away entire with the tooth growing from the peridental membrane, as shown in plate. This specimen has been kept in spirits since.

The plate shows both these cases after removal; the largest is the first case mentioned, and the smaller epulis is the second one.

FIG. 1.



FIG. 2.



Many surgeons think that in cases of epulis it is necessary

to remove some portion of the bone of the jaw at the seat of the growth, as the epulis, in their opinion, always springs from the periosteum of the bone. For some time past it has been my opinion that this is not always necessary, and in several cases I have taken out the teeth only, and not cut away the growth, as in many cases it seemed to grow from the portion of the alveolus, close round the neck of the tooth or teeth, and that as soon as the teeth were extracted, the socket being absorbed, the epulis withered away and did not recur, or it seemed as if the epulis grew from the portion of bone which formed the septum between the sockets of the teeth involved, and that by extracting both teeth the sockets became obliterated, and this portion of the alveolus was thus destroyed, and the epulis did not recur. Cases in which I have tried cutting away the epulis and as much of this septum as I could reach without extracting the teeth, so that there should not be the disfigurement caused by the loss of the teeth, have not, in my hands, proved successful. The epulis has always returned, and the tooth or teeth have had to be removed eventually. But from these two cases it seems as if the growth springs, at all events in some cases, from the alveolo-dental periosteum or root-membrane of the tooth (or the periodontal membrane). Tomes has demonstrated that the periodontal membrane is attached on one side to the tooth firmly, and on the other to the socket more loosely, thus always coming away with the tooth on removal, but that there are not two membranes, viz. a periosteum of the bone lining the socket, as well as one of the tooth, covering the fang, but only one membrane stretching across from tooth to socket, the fibres of this membrane running across in an oblique direction, slinging the tooth, and allowing it to rise and fall in its socket. This movement is well seen in inflammation of this membrane.

May not these growths sometimes originate in this periodontal membrane, and, as in these cases, come away with the tooth, if the tooth is taken out early enough? But in cases where the growth is allowed to remain without being interfered with, may not the growth spread to the periosteum of the bone which is continuous with the peri-



dental membrane at the edges of the sockets, thus implicating the bone, and making it necessary to remove portions of bone? If this view is correct, early extraction, as I have often found, is all that is required, thus leaving much less disfigurement. It will also account for the persistency of the growth, as long as the tooth or teeth remain in the mouth.

It is so simple to see how a new growth originating in the peridental membrane should spread. This membrane, if traced outwards, will be found to be continuous with the periosteum of the bone at the edge of the socket, and also to be continuous with the connective tissue of the gum, and thus, in those cases originating in the peridental membrane, if seen early or slow growing, the epulis comes away entirely with the tooth; but if neglected or quick growing it spreads either to the periosteum of the bone, or to the surface of the gum, involving one or both, when, of course, removing the tooth is not sufficient, and portions of the alveolus have to be cut away, causing much more disfigurement. So it would seem that the earlier the tooth or teeth are extracted, the more likely it is in these cases to prove a permanent cure.

These cases of epulis growing from the root-membrane seem to be quite common. Since writing the above, I have seen another case at the Dental Hospital. This was an epulis growing near the first lower molar of the left side; this growth was very hard and pale in its upper portion, but the lower part was very vascular and spongy. This also came away attached to the root-membrane when the lower molar was extracted.

The plate of the microscopical section, with the description, has been kindly lent to me by my friend Mr. J. F. Colyer.

A young woman was sent down from one of the wards with alveolar sinus of upper jaw of left side. On examination there were found the three roots of an upper molar, apparently the cause of the sinus and discharge. These roots were at once taken out. As the discharge did not stop, and the jaw did not heal as it should do, Mr. Clutton (under whose charge the patient was) explored, and with a

probe could feel something like indiarubber. The next day the patient was given an anæsthetic, and a thorough examination made. Mr. Clutton's idea that he could feel something like rubber was quite correct, as he soon extracted a piece of old drainage-tube.

*Two Cases of Abscess pointing on Face at Root of Nose just below the Eye.*

These two cases were almost identical. Both were boys under nine years of age, the abscess starting from, and caused by, temporary canine teeth. The teeth were extracted, and a probe could be passed up the socket into the abscess. Now the difficult part to determine was whether these abscesses were inside or entirely outside the bone. Naturally, if the probe went up the socket of the tooth, which was in the bone, one would be inclined to think that the abscess must also be inside the bone. But they did not seem to be so situated. On passing a knife up inside the cheek, and cutting up between cheek and bone, the knife went into the abscess and entirely emptied it. So all doubt was set at rest. The abscess was entirely outside the bone, on the superior maxilla higher up the face, past the end of the socket of canine tooth just below the eye. One must suppose that the abscess originated in the canine tooth, and had pierced the bone at the apex of its socket, and thus burrowing beneath the muscles of face, eventually pointing just below the eye. The pus in this case had probably burrowed between the bone and its periosteum.

Nellie H—, æt. 17. October, 1892.—She said she had had a swelling on the right side of her face over the angle of lower jaw for about eighteen months.

Eight months ago she had had the lower first molar of this side, which was carious, extracted, as it was thought to be the cause of the swelling. She had had more or less discharge ever since.

When she came to the hospital there was a swelling over the angle of lower jaw on the right side. The wisdom-tooth was not erupted, the second molar was quite sound, and there was apparently very little the matter with the gum; but on close inspection there was found to be a very

small sinus just in front of the second molar with a slight discharge of pus. With difficulty a probe could be passed down this sinus, running to the outer side of the tooth for about an inch and a half. The patient was given gas, and I took out the second molar. As the tooth was being extracted quite a lot of pus came away. On examination a few days after there was still a discharge, but the wisdom-tooth could not be felt. Probably the whole cause was the wisdom-tooth.

A man, about 35, came with fracture of lower jaw. There was a good deal of displacement, but it was only broken in one place. In this case I put on a Hammond splint, of which splints I keep a quantity at the hospital made of different sizes ready for use. This I have done for a long time past, and it was my own idea to have sets of these splints made beforehand, and from these sets to select the one which was suitable in each case. The splint was put on the first time of seeing the patient, and the jaw came into very good position. After the first visit this man did not come to the hospital again for several weeks (five or six). Therefore at the second visit his jaw was firmly united. I took the splint off, and the articulation of the teeth was absolutely perfect. Now, after this, it cannot be said that it is necessary to make each splint for each individual case.

Having the splint made before saves so much time and trouble both to surgeon and patient. The result could not have been better than this one was, and I only saw the patient twice—once to put the splint on and once to take it off again. It seems to me that one of the great advantages of Hammond's splint is that the upper and lower teeth are allowed full liberty to articulate during the whole time of the uniting of the fracture. The splint does not hold the portions of the jaw absolutely rigid, and in this way the upper teeth help very considerably to force the broken jaw into the right position. I generally put the splint on at the first visit, but do not pass the thin wire round all the teeth, but let the upper teeth help to rectify the displacement, and after a day or two pass more wires round more teeth, and tighten up the wires put on at the

first visit. This method is also less painful and irritating for the patient.

Mrs. Terry, who was aged 39, and had five children living, was sent by a medical man for me to see if the swelling she had on the right side of her face was caused by any of her teeth. On examination I found she had a swelling about the size of a half-walnut on the right side of her face over the angle of her jaw. It was semi-fluctuating, but did not feel like fluid unless it was thick grumous fluid. The swelling was situated in the thickness of the cheek, and was not an alveolar abscess, nor could I see that any of her teeth were the cause. The swelling was apparently in the masseter muscle, and this would account for the difficulty in opening her mouth she complained of. The skin over the swelling was not inflamed, nor was it implicated. She noticed this swelling about five months before, and it gradually increased in size. Then she began to find a difficulty in opening her mouth, which was getting worse. She could not open her mouth wide; it seemed stiff, and eating made her jaws ache; she could not eat ordinary food, and had been obliged to eat soft food. On examining other parts of her body I found a swelling of a similar character on the back of her head, on the occiput, which she had had some little time, feeling much the same, and tender on pressure. On still further examination I found the left sterno-clavicular articulation thickened and painful. She did not tell me of these swellings, but left me to find them myself. But she now told me that she had had a swelling in the left cheek similar to the one on right side, which had gone away of its own accord, and has left no trace to be found now.

Her five children, she said, were all healthy, and were aged 13, 11, 5, 3 years, and 7 months respectively, but she has had three other children who have died, the first of which died at the age of four years; the second was three days old only when it died, and the third child was three months. She has also had one miscarriage. I could get no further history in this direction, but I concluded that the swelling was syphilitic in character.



A young man came with broken lower jaw on right side at bicuspid. In this case there was great displacement; the fracture being oblique; the ends of the bone were interlocked, and I could not get the ends into position. I proposed that he should have an anæsthetic, so that when the muscles were relaxed the difficulty would be overcome, but the man objected strongly to having an anæsthetic, and said he would much sooner bear the pain. I did not feel at all hopeful of getting it into place, as it was so firmly fixed and did not seem to move, but after some little time, by manipulating in different directions, the ends came into place suddenly, and then there was no more difficulty. So it seems that in cases like this a little patience and perseverance will overcome the difficulty.

*Case of eruption of canine under the chin.*—The patient was a little girl aged six years, with a tooth erupting below her chin. On examination it was found to be the left lower

FIG. 1.



permanent canine. Three or four years before she had had diphtheria very badly. When she was convalescent, about

a fortnight after, the lower jaw began to swell uniformly, and an abscess formed, discharging a good deal of pus. Soon after two teeth were extracted, liberating a quantity of pus, and a sequestrum separated, when matters seemed to quiet down. Subsequently, however, four pustules appeared on the chin; these burst, leaving sinuses, from which necrosed bone came away. Three of these healed, while from the fourth, eighteen months later, the left lower permanent canine appeared, as it is shown in the plate, apparently turned upside down, the tip of the canine pointing downwards. This tooth was extracted, and the patient went away cured.

In hunting up similar cases, I found in the museum at the Dental Hospital a case of a lower wisdom tooth erupting on the cheek above the angle of lower jaw. Salter mentions a case of both superior lateral incisors erupting into the nostrils. There is also a skull in the museum of the Royal College of Surgeons, which shows the eruption of an upper right canine tooth into the nostril. Dr. Ward Cousins had a case in which a temporary left canine had become encysted in the left orbit, and I believe the tumour was removed. In another case, under Mr. Carver, of Cambridge, a boy six and a half years old had a canine tooth erupting through the right lower eyelid. The tooth had commenced to appear when the boy was four and a half.

Nine or ten months later I was surprised to see this same little girl at the hospital again. This time she had a second tooth coming from the same sinus through which the canine had already come. This second tooth, on examination, proved to be the bicuspid, following in the road already made for it by the canine. This tooth I also took out, and the child is, I believe, cured. Time only can show if any more teeth will come and erupt through this old sinus.

In this case it seems to me that the teeth, as they generally do, took the course where there was the least resistance. The abscess had broken down the bone, and there was only soft structure to come through. On looking at the dried bone in the museum, if dissected to show the permanent teeth lying in the jaw before eruption, the teeth will be found

to lie very deep down in the jaw at this time. The temporary teeth are seen in position in the mouth, and the permanent ones lying very deep down embedded in the jaw, below the fangs of the temporary teeth. Now, if we imagine the outer surface of the bone broken away by this abscess, it will be seen that it would be quite easy for the canine to erupt in the position it has, without altering its direction so much as at first sight it appears to have done, and of course it would be still easier for the second tooth to follow the road made for it by its predecessor.

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## DESCRIPTION OF PLATE

Illustrating Mr. C. E. Truman's "Contributions from the Dental Department."

The tumour—about the size of a small filbert and attached to the external surface of an upper molar just below its neck—was a firm pedunculated growth.

On vertical section it presented on its periphery a stratified epithelium (*b*) of which the free border was almost cornified, the cells being tightly wedged between one another and containing no nuclei. Immediately beneath the epithelial cells become varied in shape, until above the basement membrane (*c*) they assume a cylindrical form.

The submucous tissue (*d*) consists of a loose arrangement of fibrous tissue and cells with prominent nuclei. It is destitute of glands. Here and there spaces (*h*) filled with a colloid material are observed. Thick bands of fibrous tissue form septa-like partitions between the lobules of the growth (*f*), and enclose large masses of tissue consisting of nucleated cells, numbers of multinucleated giant corpuscles, and short wavy connective-tissue fibres (*e*).

Irregular nodules of bone are seen here and there (*g*).

The attachment to cementum (*i*) is very loose, and chiefly composed of long fibres with cells; but the looseness is considerably strengthened and supported by two or three columns of fresh cemental tissue running vertically alongside the roots of the tooth.

No nervous structures are to be seen, and there is a remarkable absence of blood-vessels. Long spaces exist in various parts, but as they do not present definite walls they cannot be looked upon as capillaries.

Traces of lymphatics cannot be found.







# ABSCESS OF THE LIVER.

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By WALTER EDMUNDS.

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THE diagnosis of an abscess of the liver is sometimes very difficult, indeed I am told that it is not a very rare occurrence for an abscess of the liver which had not been suspected to be discovered in the post-mortem room, the case having been regarded during life as one of pneumonia. An abscess in the upper part of the right lobe of the liver may cause by compression of the base of the lung dulness and tubular breathing: when the pain is severe and the fever does not subside at the period usual for pneumonia, abscess of the liver should be suspected, and this although the patient has never been abroad.

An abscess being diagnosed it has to be found and drained.

To find the position of the abscess it is advisable to aspirate, using a cannula sufficiently large to allow thick pus to flow. An aspirator indeed is almost necessary, for the pus will sometimes not flow through the cannula unless aspiration is applied.

The aspirator needle can be introduced through a minute incision in the skin, but it is usually better to cut down on the liver under an anæsthetic; if the liver is especially prominent anywhere, the incision should be made there, or the most tender part selected. If thought advisable a portion of a rib may be removed and the pleura opened; the diaphragmatic pleura is then divided and the two layers of

pleura sutured together to cut off its cavity ; the diaphragm is then incised and the liver exposed. I have operated twice in this way. The method has the advantage of giving a dependent opening, but that is not a necessity if only the opening is free.

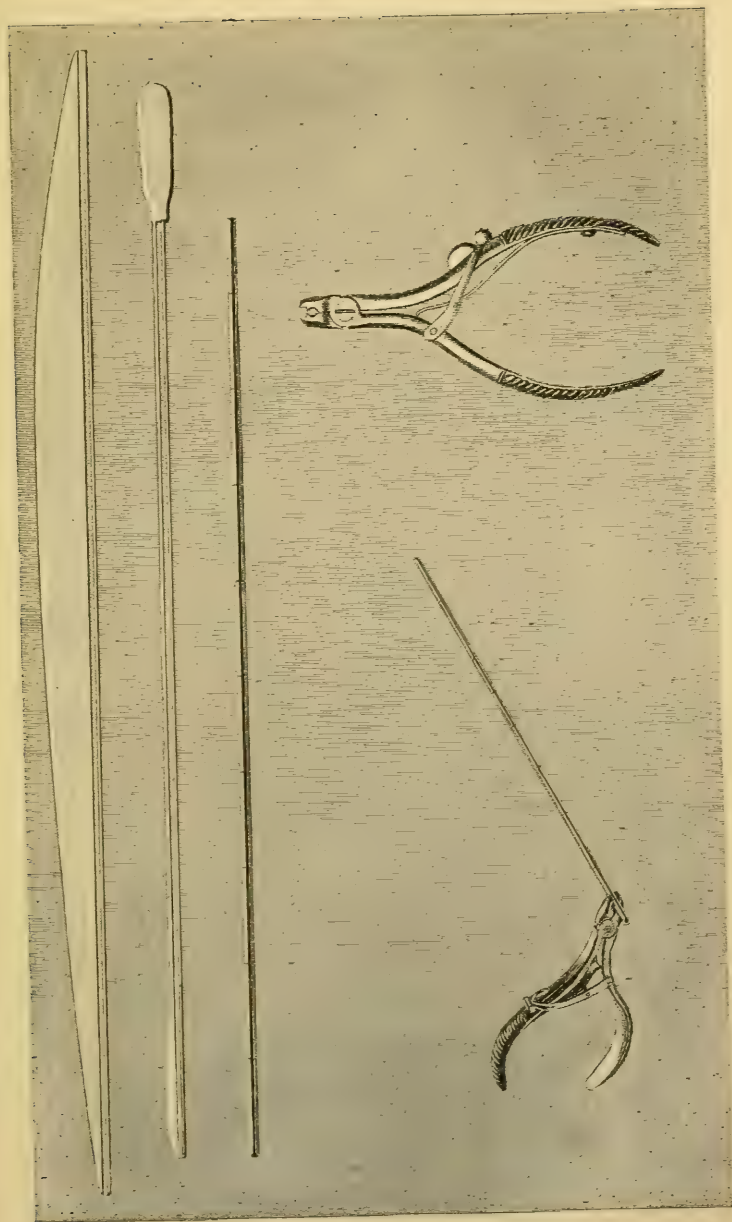
The first case, I believe, at St. Thomas's in which an abscess of the liver was drained by this route was one under the care of the late Dr. Gulliver, and in which the operation was performed by Mr. Pitts. The case will be found recorded in the 'Lancet' for March 24th, 1883.

The liver being exposed, if it is adherent it may be at once explored with the aspirator. If it is not adherent and the case is not very urgent, a plug of gauze should be introduced into the wound down to the liver, and the exploration postponed for two or three days. An anæsthetic will not be required for the second part of the operation, for the liver is insensitive.

It may be necessary to introduce the trochar and cannula in two or three directions before finding the abscess. It being found, there remains to pass a large drainage-tube into it.

The cannula will be retained in position to act as a guide, but even if the abscess is not very deep a cannula makes an awkward director to cut along with a tenotome ; if the abscess is deep a long narrow-bladed knife (if at hand) will be used, but there will be danger of not following the cannula, and of making a needlessly large incision. It was to meet this difficulty that the instrument shown in the accompanying drawing was devised. It consists of a long director small enough to pass down the largest sized cannula of the aspirator, and of two knives of different sizes made to run along the groove in the director. (The principle is the same as that of Maissonneuve's urethrotome, but the shape of the knives is different.) There is further a wedge-shaped dilator which slides in the director. There are also a pair of scissor-shaped dilators, with long straight blades at right angles to the handles. Finally there is a needle-holder for grasping the director and acting as a handle to it, but this is not necessary.

In use the director is passed down the cannula into the







abscess cavity, and the cannula withdrawn over it ; for this reason the director is long and has no handle at its end. The knives are slid down the director, and enlarge the opening by cutting in various directions ; the wedge-shaped dilator is used for the same purpose, first the small end and then the large. If the opening is not sufficiently large, the right-angled dilators are introduced, and a blunt-pointed bistoury passed between the blades. Finally a large drainage-tube is passed in.

I have recently had an opportunity of using this instrument in a case of abscess of the liver, and it worked satisfactorily. Mr. Bidwell has also used it, and gives his experience in the next communication.

The instrument was made for me by Messrs. Down Brothers, of St. Thomas's Street, Borough.



## A CASE OF ABSCESS OF THE LIVER.

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By LEONARD A. BIDWELL, F.R.C.S.,  
ASSISTANT SURGEON TO THE WEST LONDON HOSPITAL.

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THE following case of abscess of the liver may prove of interest, as the instrument described by Mr. Walter Edmunds in the preceding article was employed at the operation.

From a medical point of view, too, the case is interesting, because the abscess occurred in a patient who had not been out of this country for the last nine years, and who had suffered from dysentery fourteen years previously.

J. G—, æt. 42 years, was admitted into the West London Hospital on July 19th, 1892, under the care of Dr. Hood.

He had been in the army, and while in India fourteen years ago he had one attack of dysentery, and has not had another since. He also suffered from ague, and even now has two or three attacks every summer. He left India and retired from the army nine years ago; he has always been temperate.

*Present illness.*—Six weeks before admission he complained of feeling feverish, and of pain in the abdomen; he had not noticed any swelling of the abdomen, but has lost flesh.

*On admission.*—The patient was slightly jaundiced, and rather emaciated; tongue clean; temperature 100°.

Lungs and heart normal.

*Abdomen.*—There was a distinct prominence in the right



hypochondriac region ; the liver dulness extends up to the fifth rib, and its edge can be felt  $2\frac{1}{2}$  inches below the costal arch in front ; the surface appears to be smooth. There is a good deal of pain just above the umbilicus. The intercostal spaces both in front and behind, on the right side, are widened.

July 31st.—The liver has increased in size, and its edge extends nearly to the umbilicus. The temperature has been of a hectic character, varying between  $97\cdot4^{\circ}$  and  $101^{\circ}$ , or even  $103\cdot2^{\circ}$ . There is a tender spot about 2 inches below the ribs, just about the centre of the prominence. The case having passed under the care of Dr. Ball, I was asked to see it.

August 2nd.—Ether was administered, and an exploring needle inserted into the liver at a point 2 inches below the costal arch ; pus was obtained. An incision about 4 inches long was then made parallel to the ribs, passing through the puncture made by the aspirator. The outer part of the rectus was divided, and the peritoneum opened. There were no adhesions between the liver and the parietes. The parietal peritoneum was then stitched to the skin, and strips of iodoform gauze placed on the surface of the liver. An antiseptic dressing was applied.

5th.—The wound was dressed, and it was found that the adhesions between the liver and abdominal wall were quite firm ; the plug of gauze was removed, and the largest needle of the aspirator having been plunged into the liver in a direction backwards and upwards, pus was obtained. The trocar having been withdrawn, Mr. Edmunds' grooved staff was passed through the cannula into the abscess cavity ; after sliding the cannula off the staff, the knife was run down the groove, and the opening enlarged by cutting laterally. The dilator was tried, but did not pass easily, so was not forced. The abscess appeared to be about 2 inches from the surface of the liver. About one pint of thick and blood-stained pus escaped ; two large drainage-tubes were inserted, and the wound dressed with iodoform gauze. This latter operation was performed without an anæsthetic, and no pain was experienced in cutting the liver.

9th.—Dressed twice daily since the opening ; the pus is still

thick and abundant ; both tubes removed, and a single larger one inserted. The temperature has been normal since operation.

14th.—Tube shortened ; less discharge.

16th.—Tube removed.

29th.—Patient has gained flesh ; no discharge from wound, which is granulating quickly.

September 11th.—Wound has been healed for a week. There has been no pain since operation, and the edge of the liver cannot be felt below the ribs. Discharged.

It will be noticed that I did not make any exploratory puncture of the liver till the patient was under ether and I was prepared to expose the surface of the organ. It has always seemed to me that there is a danger of intra-peritoneal extravasation of pus when these abscesses are aspirated some days before an antiseptic incision ; in fact, when I exposed the surface of the liver immediately after aspirating, I could see a drop of pus in the track of the needle. There is more danger of this happening after exploring for abscess of liver than for other conditions, as the thickness of the pus requires the use of the largest needle of the aspirator. For making the opening into the liver I think that a cutting instrument is necessary, for in the two cases on which I have operated the walls of the abscess were too dense and unyielding to be dilated by a blunt instrument, and I think that, in forcing down one of the blunt dilators of Mr. Edmunds' instrument, there would be a danger of disturbing the delicate adhesions between the liver and the abdominal wall.

The other case to which I have just referred as having a very dense-walled abscess was that of a gentleman, 32 years of age, on whom I operated three years ago. He had contracted dysentery and abscess of the liver in Java.

Dr. Bristowe kindly saw the patient with me, and we performed a preliminary aspiration, obtaining pus. Two days later I cut down on to the liver by the anterior incision, and finding that there were no adhesions, I stuffed the wound with iodoform gauze. Three days after the incision, without an anæsthetic, I passed an aspirator upwards and backwards into the liver, and obtained pus. I then

tried to pass a steel director, along the side of the aspirator, into the abscess cavity, but owing to denseness of the liver substance I did not succeed. The aspirator having been withdrawn, a trocar and cannula, of the form devised by Sir Joseph Fayrer, were plunged into the abscess, which was about three inches from the surface of the liver; the cannula has a longitudinal slit, which allows of its being used as a director. A special pair of rectangular dilating forceps were passed down the cannula, which was then withdrawn; the slit in its side allows this to be done. (For the loan of these instruments also I was indebted to Mr. Edmunds.) On attempting to dilate the opening, I found I was prevented by the hardness of the tissues, so a probe-pointed bistoury was passed between the blades of the dilators, and a free incision made in the liver. About thirty ounces of pus were collected, and a drainage-tube was introduced. The tube was removed on the tenth day, and the abscess had ceased to discharge on the sixteenth day, but unfortunately the dysentery continued, and the patient died about a month after the operation. Mr. Edmunds' instruments in this case would have made matters much easier. In both the cases to which I have referred the swelling was mostly in front, and that induced me to reach the abscess by an anterior incision, although when possible the posterior incision with resection of a rib seems preferable. However, although this anterior opening does not favour drainage, both cases healed very rapidly, and never had any elevation of temperature, or signs of retention of pus. In neither case was there any pain on incising the liver without an anæsthetic, and the bleeding from a fairly free incision in that organ was not of any consequence.

THE TREATMENT  
OF  
ANEURISMS ON THE ARTERIES OF THE  
EXTREMITIES.

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By G. H. MAKINS,  
ASSISTANT SURGEON,

AND

F. C. ABBOTT, M.B., B.S.,  
SURGICAL REGISTRAR.

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THE cases included in the following compilation were under treatment in the hospital during the twenty years between 1871 and 1890 inclusive. This period extends some four years prior to the general adoption of strict antiseptic wound treatment, but happily this does not in any way affect the general results obtained. The growth of confidence dependent on the more favourable course observed in wound treatment, however, is well illustrated in the greater promptitude with which ligature of the vessel was decided on in the later cases of the series, and the comparative infrequency with which methods of compression were resorted to.

The comparative rarity of the disease accounts for the small number of cases which we have to deal with, popliteal aneurism alone offering sufficient material for any general deductions ; but it is thought that the collation may never-



theless be useful to future authors who may be in a position to add further cases, and may form a basis for a fresh series of modern statistics to stand side by side with the large collections of older cases made by Erichsen, Holmes, Rabe, and others.

The table includes fifty-seven aneurisms distributed as follows :

Upper extremity—

Subclavian . . . .	3
Axillary . . . .	6
Brachial . . . .	2
Radial . . . .	5
Ulnar . . . .	1
Superficial palmar arch . .	2
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	19

Lower extremity—

Iliac . . . .	1
Ilio-femoral . . . .	3
Common femoral . . . .	2
Superficial femoral . . . .	4
Popliteal . . . .	28
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	38 = 57

The great majority were of the ordinary spontaneous variety and sacculated ; the exceptions are nine traumatic aneurisms (one popliteal, four radial, one ulnar, two superficial palmar arch, and one arterio-venous aneurism of the radial), one case of acute embolic aneurism of the brachial (No. 11), developing during a fatal attack of acute ulcerative endocarditis, and one case of ilio-femoral aneurism (22), also probably acutely embolic in origin, following parturition.

Of the whole number of aneurisms, fifty occurred in males, seven in females (one of these being subclavian, one axillary, one brachial, one ilio-femoral, one popliteal, and two traumatic of the forearm).

Short details concerning each of the cases will be found in the accompanying table,<sup>1</sup> and hence it is only necessary to summarise briefly a few points in each class, prior to making some general remarks on the methods of treatment employed and their results.

The three subclavian aneurisms have been included

<sup>1</sup> Table I, p. 222.

merely to mark the incidental average, but as they were not subjected to any active treatment they call for no further remark.

The five axillary aneurisms were all spontaneous in origin ; four occurred in males, one in a female. One (4) was treated unsuccessfully by various compression methods ; one (5) was treated by digital compression unsuccessfully, and then by ligation of the axillary artery above and below the sac. The latter procedure cured the aneurism, but the man returned five years later with a fresh aneurism at a lower spot, for which treatment was refused by the patient. The other three (6, 7, 9) were successfully treated by ligation of the third part of the subclavian artery.

Of the two brachial aneurisms, one (10) was successfully treated by compression combined with galvano-puncture, and one (11) was a case unfit for treatment. One occurred in a male, one in a female.

Of the eight aneurisms of the arteries of the forearm and hand, all were traumatic and consecutive to wounds either by knives or glass ; six occurred in males, two in females. One (15) was unsuccessfully treated by digital compression ; this was later treated by double ligature and excision of the sac, as were two others (16, 17). Four (12, 13, 18, 19) were treated by proximal and distal ligature combined with excision and turning out of the clot. The case of arterio-venous aneurism (14), after an unsuccessful trial of compression, was treated by incision and ligature of brachial, ulnar, and radial arteries, as well as of some veins.

Of the inguinal aneurisms, one (20) was iliac, three (21, 22, 23) were ilio-femoral. Three occurred in males, one in a female. All were treated by ligature of the external iliac artery. Only one case was cured (20). One died of sepsis (21) ; one was discharged with recurrent pulsation (23) ; and one, the female case, an acute embolic aneurism, was already suffering with gangrene of the foot and albuminuria when admitted. Ligature of the external iliac was performed at the same time as an amputation of the thigh, and she died of exhaustion (22). This series is the worst of the whole.

Of the femoral aneurisms two were situated upon the

common femoral, four upon the superficial femoral; all six occurred in males. In all compression methods were tried, in three successfully, in three unsuccessfully, but the latter were subsequently cured by ligation of the external iliac artery in one case, and by ligature of the superficial femoral in the other two. In one case (27) an aneurism in Hunter's canal was cured by digital compression, and was shortly followed by a fresh aneurism at a slightly higher level; this was successfully treated by ligature of the superficial femoral after an abortive attempt by digital compression (28).

Of the popliteal aneurisms twenty-seven were spontaneous, one traumatic. One occurred in a female. The average age of twenty-six of the cases was remarkably even, amounting to thirty-five years; in two cases the age was unrecorded.

Twenty-six cases (92·85 per cent.) were cured, and two (7·14 per cent.) died.

Six cases were treated by digital compression alone, and of these four were cured and two died. Seven by Esmarch's bandage, five were cured. Six by ligation alone, all were cured. In five ligation cured the cases after failure of digital compression. One case was cured by ligature after failure of digital compression and Esmarch's bandage. In one case digital compression was combined with galvano-puncture successfully (46), and one case was cured by flexion, and a pad applied locally.

In twenty-six of the cases treated by various methods the average duration of stay in the hospital amounted to 66·9 days.

*Treatment.*—As will be seen on examination of the table, digital compression and ligature have been the methods of treatment most frequently employed, although Esmarch's bandage claimed a fair number of cases during the years 1875–1882, inclusive.

We shall now shortly note the results obtained by each method.

*Digital Compression.*<sup>1</sup>—In reviewing the cases it is a little difficult to definitely determine what were the precise indications for choosing this method. Broadly speaking, however, it may be said that the cases selected for it have been on

<sup>1</sup> Table III, p. 238.

the one hand extremely favorable ones for treatment of any kind, on the other patients in whom the presence of severe cardiac trouble or other visceral disease made the surgeon anxious to avoid any serious operation of an active kind. The latter fact probably goes far to explain the fatalities which occurred.

The method was adopted in twenty cases in all. In six of these (30 per cent) it succeeded, in twelve (60 per cent.) it failed to cure the aneurism (in eleven of these, however, success was ultimately obtained by other means), and in two (10 per cent.) it was followed by death. If we add the two deaths to the failures, we have a total of fourteen (70 per cent.) failures and six cures (30 per cent.).

All the six cases in which a cure was obtained were aneurisms of the lower extremity, two of the superficial femoral (Nos. 26, 27), four of the popliteal (Nos. 30, 39, 44, 54). In all the common femoral was the artery compressed.

In nine other cases in which this vessel was compressed, two femoral aneurisms (Nos. 25, 28) and nine popliteal aneurisms (Nos. 37, 41, 45, 46, 47, 48, 55), failure resulted, eight being eventually cured by ligature, and one by galvanopuncture.

Death occurred in two cases as a result of gangrene of the limb (Nos. 42, 43).

The percentage result of compression of the common femoral artery therefore is as follows:

Cures	.	.	.	.	.	6	=	35.2 %
Failures	.	.	.	.	.	9	=	52.9 %
Deaths	.	.	.	.	.	2	=	11.7 %
						17		

Or success 35.29 %; failure 64.7 %.

It may be noted as evidence of the thoroughness of the trial of this method that in sixteen of the cases in which it was tried the compression was maintained for very considerable periods, either continuously or at intervals, the average duration in the successful cases being 22 hours 8 minutes, in the unsuccessful  $15\frac{3}{4}$  hours, or adding the two sets together,  $18\frac{3}{4}$  hours. The extremes, however, vary from 4 hours to 76. Reference to the table shows that in



both the fatal cases (42, 43) the patients were subjects of advanced visceral disease, in both the aneurisms solidified, in both gangrene occurred, and both were subjected to subsequent amputation. In one the cause of death is given as sepsis, in the other as exhaustion. In both the gangrene may have been the result of pressure upon the vein during the carrying out of the treatment.

In two cases the pressure of the fingers gave rise to local gangrene of the skin ; in one this was of little importance, as the aneurism was cured, but in the other (28) the resulting sore was probably the cause of suppuration in the wound subsequently made to ligate the artery below. This, however, is the only instance in which treatment by digital compression is shown to have unfavorably influenced other subsequent methods.

Pressure on the third part of the subclavian artery for axillary aneurism was tried twice (Nos. 4, 5), in both cases unsuccessfully ; one case (5) was subsequently cured by ligature.

*Esmarch's Bandage.*<sup>1</sup>—The plan adopted was to bandage the limb up to the level of the aneurism, if possible lightly over the tumour, and then to apply the tourniquet above, leaving the sac distended with stagnant blood. The bandage was left undisturbed for about one hour, was then removed, and the blood-current in the limb controlled for a further period by either digital or instrumental pressure.

The method was employed in twelve cases, eight times with success (66·66 per cent.), four times unsuccessfully (33·33 per cent.). No immediate ill result occurred in any case, and the four cases in which it failed were afterwards cured by other methods.

The successes were again met with in the lower extremity, seven were cases of popliteal aneurism (31, 32, 33, 34, 36, 37, 40), one of femoral aneurism (29).

The failures were one brachial aneurism (10), an arterio-venous aneurism of the radial (14), one femoral aneurism (24), and one popliteal (51). These were all subsequently cured, the brachial aneurism by galvano-puncture, the others by ligature of the afferent artery.

<sup>1</sup> See Table III, p. 238.

As far as these results go the method was fairly successful, for although not coming out so well as ligature, no immediate harm was caused, and no unfavorable influence was apparent on the treatment subsequently adopted. In three cases, however (29, 31, 33), the patients died shortly after from the rupture of thoracic aneurisms, and the belief gained ground that this might be due to the unusual strain exerted on the vascular system, by the driving into the rest of the vessels the whole of the blood naturally located in the affected limb. This opinion, taken together with the immediate ill results experienced by other surgeons, has led to the practical abandonment of the elastic bandage of late years.

*Ligature.*<sup>1</sup>—Ligature as the sole method of treatment was adopted in eleven cases.

Third part of subclavian for axillary aneurism, three, all successful (6, 7, 9).

External iliac, for iliac and ilio-femoral aneurism, three ; of these one (20), resulted in cure, one (21) died, and one failed to cure the aneurism (23).

Femoral at apex of Scarpa's triangle for popliteal aneurism, five (38, 49, 50, 52, 57). All successful.

Ligature after failure of digital compression, nine cases.

Axillary above and below sac of axillary aneurism, one, successful (5).

External iliac, one for femoral aneurism (25), successful.

Femoral at apex of Scarpa's triangle, seven, once for femoral aneurism (28), six times for popliteal aneurism (37, 45, 47, 48, 51, 55), all successful.

Ligature after failure of Esmarch's bandage :—

Brachial, radial and ulnar, one for arterio-venous aneurism of radial (14), successful.

External iliac, one for aneurism of common femoral (24), successful.

Femoral at apex of Scarpa's triangle, one, for popliteal aneurism (49), successful.

Ligature of proximal and distal ends after incision of sac in traumatic aneurisms :—

Radial, two (12, 13), both successful.

Superficial palmar arch, two (18, 19), both successful.

<sup>1</sup> See Table II, p. 235.

Popliteal (53) one, successful, with excision of sac.

Radial, one (16), successful.

Ulnar, one (17), successful.

Of the whole number we find the Hunterian method was adopted in twenty-two, with one failure and one death; and double ligature with incision or excision of sac in seven cases, all successfully. In one case of axillary aneurism the vessel was ligatured on either side of the sac, the latter being untouched.

*Thirty-two Cases of Ligature.*

		C.	F.	D.
Subclavian . . . . .	3	3		
Axillary . . . . .	1	1		
Brachial, radial, and ulnar . . . . .	1	1		
Ulnar . . . . .	1	1		
Superficial palmar arch . . . . .	2	2		
Radial . . . . .	4	4		
External iliac . . . . .	6	3	1	2
Femoral . . . . .	13	13		
Popliteal . . . . .	1	1		
Total . . . . .	32	29	1	2

90·62 %      3·12 %      6·25 %

Or subtracting Case 22, 93·54 %, 3·54 %, 3·22 %, in which amputation was simultaneous.

The nature of the ligature employed is recorded in twenty-three cases:—

Silk . . . . .	11
Catgut . . . . .	7
Kangaroo tendon . . . . .	5

The results do not seem to have been in any way influenced by this point. It is noteworthy, however, in Case 21, in which kangaroo tendon was used, that no trace of the ligature was found at the post-mortem examination made some thirty days later; while in Case 22 a catgut ligature was found lying loose in a cavity of pus forty days after ligature, the vessel being completely obliterated. One catgut ligature (28) came away during suppuration of the wound without ill effect. In the large majority of the cases the knot used was of the reef variety.

In five cases (47, 49, 51, 55, 57) the ligature was so applied as to leave the middle and internal coat intact; in one recurrent pulsation occurred, and this was treated by reopening the wound, doubly ligaturing the artery, and excision of the original ligature (51).

In Case 48 the vessel was divided between two ligatures.

The prior employment of Esmarch's bandage or of digital compression seems in no case to have had any unfavorable influence on the later treatment by ligature.

One case was treated by flexion with a pad (56); in this the sac was subsequently opened, and the clot turned out.

The results as they stand uphold the treatment by ligation. The percentage of success here reaches the high figure of 93·54, and in no case did either secondary hæmorrhage or gangrene follow its application.

Details of the cases treated by galvano-puncture will be found in the 'British Medical Journal,' vol. i, 1879, p. 509.

On massing the whole number of cases the results come out as follows :—

Cured . . . . .	46	=	80·07 %
Relieved . . . . .	2	=	3·7 %
Died . . . . .	4	=	7·4 %
Untreated . . . . .	5	=	9·25 %
	<hr/> 57		



TABLE I.—*Upper Extremity.*

No. under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
1. 1877	<i>Subclavian.</i> J. P., shoemaker	45	M.	—	No history	—	1st part	Rest; bromide of potassium	—	28	R.	No tumour palpable; case doubtful.
2. 1885	D. S. C., labourer	45	M.	6 months	No history	Strain in lifting, 6 months	Right, extending 2 in. above clavicle	Operation refused	—	24	U.	Cardiac hypertrophy, aortic valvular disease, rigid arteries; pulses and pupils equal; pressure on trachea and gullet; much pain down arm.
3. 1887	J. P., married, 6 children	48	F.	Numbness and weakness in hand 12 months; œdema and occasional shooting pains	No history	—	Right	Nil	—	8	U.	No pulse palpable. Aortic regurgitation. Transferred to medical ward.
4. 1876	<i>Axillary.</i> J. P., carpenter	39	M.	18 months; shooting pain, especially in 2 inner fingers	No mention	No mention	Size of pigeon's egg, on 1st and 2nd parts of artery	Digital compression of third part of subclavian 11½ hours; weight allowed to rest on aneurism 24 hours; Esnarch's bandage to limb; dieted	—	101	R.	Pulsation occasionally ceased, but never for any length of time. When he left pulsation less forcible, but still distinct.
5. 1879	N. N., painter (see No. 8)	37	M.	3 months	18 years previously	—	Size of a walnut	Digital compression of subclavian 50 hours; no result. Ligature	No mention	54	C.	Musculo-spiral paralysis; cure of aneurism did not relieve this.

6. 1881	E. M., widow	69	F.	10 months	No mention	A fall	About the size of an orange; left	Above and below sac 14 days later Ligature of third part of subclavian	Catgut	63	C.	Dressed on 10th day. Pulsation in radial noted on 2nd day, but very feeble on patient's discharge. —
7. 1882	C. B., carpenter (Crimean soldier)	49	M.	7 years	Yes; chancere, bubo, eruption	Strain; a second one month before admission, followed by rapid increase	Large, extending down wall of thorax from apex of axilla to nipple between axillary folds	Ligature of third part of subclavian	Strong catgut	51	C.	—
8. 1884	No. 5 readmitted	40	M.	A few days	—	—	Size of filbert, 3rd part	Treatment refused	—	16	U.	Paralysis due to lead poisoning.
9. 1885	W. H. E., farm bailiff (Case 37, popliteal)	33	M.	Pain 7 months; pulsation a few days	10 years, chancere and bubo	—	—	Ligature of 3rd part of subclavian on 5th day, close to margin of anterior scalene muscle	Thick catgut; drainage	30	C.	Tied close to margin of anterior scalene; pop- liteal aneurism sound.
10	Brachial. F. M., married	56	F.	2 years	10 years pre- viously	Strain in holding up patient in bed	Size of hen's egg; right bend of elbow	Esmarch's bandage one hour; digital compression of brachial 10 hours. 16th day, gal- vano-puncture, needles were left in 28 hours, and digital compression was maintained during 13 of these	—	38	C.	24 cells were employed, current passing for 6 minutes. Pressure was maintained by flexion of the elbow for some days.

No. Year under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
11. 1890	J. H. B., carpenter	52	M.	3 weeks?	—	—	Bend of elbow large, transverse axis the long one, occupied upper third of forearm	—	—	10	D.	Double mitral and aortic murmurs. P.M.—Aortic disease (ulcerative); suppurating infarcts in spleen; brachial artery passed into a large cavity filled with soft antemortem clot; exit of radial and ulnar not distinguishable.
12. 1876	Radial. O. R., cellarman	33	M.	—	—	Wound from glass; recurrent hæmorrhage on 3rd day	Just above wrist	Incision, artery disorganised for one inch; proximal and distal ends ligatured	—	—	C.	—
13. 1887	M. A. H., bottler	18	F.	3 weeks	—	Wound from bursting bottle	Size of small marble, lower third of vessel	Incision, ligature of proximal and distal ends	—	8	C.	—
14	T. P., carpenter (arterio-venous)	39	M.	—	—	Wound with knife	—	Flexion, Esmarch's bandage, digital compression for 6 hours unsuccessful; ligature of brachial, radial, and ulnar arteries, and division of vessels between ligatures; veins also ligatured	Silk	35	C.	Communication between deep median vein and radial artery immediately below bifurcation of brachial; thrill and loud rumbling murmur, especially along median and median cephalic and basilic veins.

15	G. R., labourer	35	M.	11 weeks; pulsation 10 days	—	Cut with glass bottle	Size of walnut, just above left wrist	Digital compression of radial and ulnar 24 hours unsuccessful; excision of tumour, with proximal and distal ligature of vessel	Silk	24	C.	—
16. 1890	F. R., butcher	28	M.	6 days	—	Punc- tured wound by penknife	Size of large nut, 1½ in. above wrist	Excision of sac; liga- ture of proximal and distal ends of vessel	Silk	17	C.	Original wound treated by pressure, and healed in 3 days.
17. 1889	Ulnar. J. J.	43	M.	18 days	—	Puncture with point of an eraser	Left, in palm	Excision of sac; liga- ture of proximal and distal ends of vessel	Silk	9	C.	About 1 inch below original wound, just above deep palmar branch.
18. 1881	Superficial palmar arch. J. S.	10	F.	1 month	—	Wound by broken china	—	Sac incised; arch liga- tured on each side; long slit found in vessel	—	18	C.	Followed two attacks of recurrent hemor- rhage.
19. 1884	W. K., potman	20	M.	1 month	—	Wound	—	Sac incised; ligature of arch on each side	—	19	C.	—
<i>Lower Extremity.</i>												
20. 1881	Iliac. W. S., railway porter, ex soldier	56	M.	Swelling noticed 3 months, pain 6 weeks	Chancere and bubo 10—15 years pre- viously; no his- tory of eruption, &c.; no scars	None	Left, size of the fist, skin red, coverings thin; pulsation extended to within 4 in. from umbilicus	Ligature of external iliac artery, 1 inch above aneurism, 1½ inches below bifurca- tion; two dressings only	Kanga- roo tendon	162	C.	Radials hard and tor- tuous. Skin puckered; aneurism shrank, and was quite solid on dis- charge. A small aneu- rism was noted in opposite groin.



No. Year under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
21. 1882	<i>Ilio-femoral.</i> Same patient	57	M.	15 months	—	—	Right, size of hen's egg, reaching just above Poupart's ligament	Ligature of external iliac	Kangaroo tendon	38	D.	Skin over aneurism and wound sloughed; patient died after three rigors. P.M.—Aneurism solid; pericarditis with effusion; emphysema of lungs; granular kidneys; ligature undiscoverable; left aneurism filled with firm yellow clot.
22	H. F., married. Gangrene of foot, albuminuria	20	F.	10 weeks	No mention	Followed confinement	Size of walnut, left	Amputation of thigh, followed immediately by ligature of external iliac, 1½ inches above sac	Thick carbolised catgut	43	D.	Died from exhaustion. P.M.—Mitral disease; old infarcts of kidney and spleen; 10 ounces blood-stained fluid in pericardium; artery obliterated at seat of ligature, latter found lying loose in some pus in left iliac fossa.
23. 1885	F. K., carman (see popliteal, Case 43)	42	M.	6-7 weeks pain and swelling in groin	No	—	Right	Ligature of external iliac on 10th day	—	76	R.	Under treatment for popliteal aneurism at same time (see No. 43, popliteal series). Slight recurrent pulsation in iliac aneurism on discharge.
24.	<i>Common femoral.</i> W. F.,	46	M.	4 months	No	No	Right,	Esmarch's bandage and	Silk;	96	C.	Pulsation returned in

1879	baker	29	M.	Pain 2 months	history	history	size of a walnut	digital compression alternately for 1 hour 20 min.; 5 days later compression by Carte's abdominal tourniquet. Ligature of external iliac	wound closed with catgut, drain	both tibials on the 2nd day; 2 dressings 7th and 14th days; small abscess formed in cicatrix. Aneurism quite solid on discharge.
25. 1889	C. M., sanitary inspector	29	M.	Pain 2 months	No history	No history	Left, oval, $6\frac{1}{2} \times 4\frac{1}{2}$	Ligature of external iliac, after unsuccessful digital compression	Kangaroo tendon, no drainage	C. Sac extended one inch above Poupart's ligament. Some suppuration of wound.
26. 1879	<i>Superficial femoral.</i> W. C., farrier	34	M.	1 month	12 years previously eruption and iritis	—	$3\frac{1}{2}$ in. in diameter	Petit's tourniquet 12 hours; after an interval of 12 hours digital compression for 4 hours; consolidation after 1st hour of d. c.	—	C. Sac much smaller and solid on discharge.
27. 1883	C. A. E., china packer, ex life guards and police	29	M.	Pulsation noted 8 months, tumour 1 month	Chancre and eruption 9 years previously	—	Large, oval, 3 in. long, in Hunter's canal; left	Digital compression of common femoral $25\frac{1}{2}$ hours; position of compression varied	—	C. Extensive valvular disease; cardiac hypertrophy.
28	C. A. E., same patient as No. 27	31	M.	Noted 7 days	—	—	Above seat of old aneurism; left	Digital compression of common femoral 30 hours, unsuccessful, causing sloughing of skin; 7 days later ligature of superficial femoral	Chromicised catgut; drainage of wound	C. Wound suppurated and ligature came away; suppurated due to ulcer in groin, caused by sloughing following the digital compression.

No. Year under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
29	N. N., waterman	34	M.	—	—	—	Apex of Scarpa's triangle, large thin sac; femoral artery palpably diseased above	Esmarch's bandage applied as high as tumour for 1 hour; tourniquet to artery at brim of pelvis for a few hours; no change. Same treatment repeated; tourniquet retained 9 hours; aneurism then solid, but digital compression was continued for 26 hours more	—	—	C.	Aneurism shrank steadily; no pulsation, but fluid contents. Death occurred subsequently from rupture of aortic aneurism. 'Brit. Med. Journ.,' 1880, vol. i, p. 441.
30. 1876	<i>Popliteal.</i> T. L., labourer	36	M.	14 days	Unrecorded	Unrecorded	Small orange, thin-walled	Digital compression for 76 hours. Cured in 60 hours	—	19	C.	On discharge aneurism much smaller, quite hard, with a large anastomotic vessel crossing it.
31	R. W., barman	32	M.	10 weeks pain; 6 weeks pulsation	Unrecorded	Strain 4—5 months	Upper part of artery, 2 in. long	Esmarch's bandage 55 minutes; tourniquet full pressure 1½ hours, light pressure 9½ hours	—	25	C.	Pulsation ceased 2 hours after commencement of treatment. Tumour hard and much smaller when patient was discharged. Subsequent death from rupture of small aortic aneurism. 'Lancet,' 1876, vol. ii, p. 46.
32. 1877	J. T., dairyman	31	M.	2 months; cedema of limb 1 week	Unrecorded	No mention	Right, size of a small orange; walls thin and	Esmarch's bandage 55 minutes; tourniquet 3 hours 20 minutes, with no result; digital compression 11½ hours, cessation of pulsation,	—	20	C.	Sac not much diminished in size, but quite solid when patient was discharged. 'Brit. Med. Journ.,' Oct. 20, 1877, vol. ii, p. 562.

33. 1878	A. B., musician	34	M.	4½ months	Yes; nodes on sternum, clavicle, and radius, ulcers on limbs	No history; much standing	None	About centre of space, 2½ × 2½ in.	—	—	20	C.	Subsequent death due to innominate aneurism. 'Brit. Med. Journ.,' 1880, vol. ii, p. 15.
34	N. N., widow	43	F.	7 months	No mention	No history; work not heavy	—	—	—	—	72	C.	Temporary recurrent pulsation. 'Lancet,' 1878, vol. i, p. 85.
35. 1880	G. T., messenger, cellerman	39	M.	6 months; pulsation 1 month	No history; gonorrhœa, gout	None; work not heavy	—	—	No mention	—	64	C.	—
36	N. N.	—	M.	—	—	—	—	—	—	—	—	C.	'Lancet,' 1880, vol. i, p. 289.
37	N. N.	36	M.	10 weeks	Yes	—	—	—	—	—	—	C.	'Lancet,' 1880, vol. i, p. 289.
38	J. H., tailor	39	M.	2 months	No history	Uses heavy irons on a board placed across knees	—	—	No mention	—	94	C.	—



No. under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
39. 1882	R. M., labourer	35	M.	8 weeks pain; 2 weeks tumour	No actual history; wife had 2 miscar- riages	None	Right; in upper part of space; size of a large orange	Digital compression of common femoral 8½ hours; pulsation ceased in 8 hours	—	46	C.	Returned some months later with aneurism of thoracic aorta. Sac of popliteal aneurism much smaller and quite firm on dis- charge.
40	W. H. P., clerk; had been farmer	30	M.	10 weeks	No mention	Strain while running	—	Esmarch's bandage; digital compression of common femoral 13 hours; pulsation ceased in 11 hours	—	30	C.	Sac quite firm and much smaller on discharge.
41. 1883	F. H. Has been an athlete, 4 mile runner	32	M.	4 weeks; diffusion 14 days before admission while walking	Yes; old scars on shin	—	Left; large, upper edge ill defined, spread- ing 8 in. up thigh	Digital compression of common femoral 18½ hours, unsuccessful; 2 days later ligature of femoral at apex of Scarpa's triangle	No mention	74	C.	—
42	W. S., porter	38	M.	Swelling of limb 9 months; tumour noted 2 months	No history of syphilis; has had gonor- rhea	—	Right; large, double aortic murmur, cardiac hyper- trophy	Digital compression of common femoral 9 hours; gangrene on 2nd day; amputation through mid-thigh on 11th day; pyæmia	—	16	D.	No post-mortem ex- amination allowed.
43	W. D., plasterer	64	M.	6 months pain; 6 weeks	None	—	Right; large, general	Digital compression of common femoral 12½ hours; consolidation;	—	28	D.	At the post-mortem examination a ragged longitudinal rent of

44. 1884	W. W., labourer	31	M.	12 months pulsation; 6 months pain and cedema of leg; 3 months swelling	No history	—	Left, 4 × 1 in.	arterial degenera- tion well marked	gangrene of leg on 6th day; amputation of thigh	—	26	C.	1½ inches was found at a calcified spot on the inner side of the vessel; this communicated with a cavity, walled by a few thin lamella of firm clot, and some soft, dark coloured clot in the centre; early interstitial nephritis. 7 weeks before admis- sion was treated inter- mittently with tourni- quet at St. George's for 12 days with no result.
45	H. M., clerk	29	M.	12 months pain and swelling; pulsation 14 days	Yes; 6 years pre- viously	Strain while running	Left, size of walnut	Digital compression of common femoral 6½ hours, with no result; 7 days later ligature of femoral at apex of Scarpa's triangle	Digital compression of common femoral 6½ hours; galvanopunc- ture	Strong catgut	37	C.	Sac firm and much smaller on discharge.
46. 1885	T. K., carman	42	M.	—	No history	—	—	—	Digital compression of common femoral 24 hours	—	31	C.	See ilio-femoral aneu- risms, No. 23.
47. 1886	T. C., unrecorded	29	M.	2 months pain and swelling; tumour 1 month	No history; gonor- rhea 2 years ago	No	Left	Digital compression of common femoral 14 hours, no result; liga- ture at apex of Scarpa's triangle	Digital compression of Kanga- roo ten- don, reef knot with extra loop; coats not ruptured	—	56	C.	—

No. under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
48. 1887	W. C., carman	25	M.	4 days	—	Lifting heavy weight, seized with cramp-like pain, and swelling size of hen's egg noted	Right, $3\frac{1}{4} \times 2$	Digital compression of common femoral 12 hours, no result; 10 days later ligature at apex of Scarpa's triangle	Silk; vessel divided between two ligatures	55	C.	4 years previously a left popliteal aneurism had been cured by ligature of the femoral, after an unsuccessful attempt with digital compression.
49. 1888	H. G., policeman. Has been soldier. 100 yards sprinter	30	M.	3 weeks; œdema of leg and effusion in knee-joint	Venereal disease 9 years previously; no sign of syphilis	Slip from kerb	Large; feeble pulsation in tibials	Ligature of femoral at apex of Scarpa's triangle	No. 4 silk; coats not ruptured	81	C.	Sac firm and much diminished in size on discharge.
50	J. D., horse-keeper; late guardsman	50	M.	1 year; 5 weeks rapid enlargement	Venereal disease 16 years ago	Potts' fracture 1 year ago	—	Do.	Do.; drainage	48	C.	Do.
51	W. S., farrier	44	M.	3 weeks pain and swelling; much œdema of leg	No history	—	Left; large; feeble pulsation in tibials; filled up whole popliteal space	Flexion 7 days; Es-march's bandage 1 hour, followed by digital compression of common femoral, caused little change in aneurism, but increased œdema of leg and effusion into knee-joint. 7 days later Watson's weight compressor 10 hours, followed by flexion and	Catgut	113	C.	Pulsation returned on the same evening. 18 days later the wound was reopened, the artery doubly ligatured with catgut, and the first ligature was excised.

52	R. S., batmaker	30	M.	Pain 3 months; swelling of leg 1 week	No mention	—	Left, size of a small orange in upper $\frac{1}{2}$ of space	Ligature of superficial femoral at apex of Scarpa's triangle on 16th day	Stout silk; coats not ruptured	...	...	64 days later patient left with the aneu- rism solid and much smaller.
53	J. F. (traumatic)	28	M.	5 weeks	No history	5 weeks' history; strain in a slip (descend- ing a ladder	Limb $\frac{1}{3}$ larger than fellow; fluctuat- ing tense	Incision of calf, large escape of arterial blood; cavity plugged, and in morning re- opened, and a rent $\frac{1}{2}$ inch long was found in popliteal artery, just above bifurcation; ligature of popliteal and both tibial arte- ries	Silk; division of vessels	304	C.	Wound healed on 9th day, but on 20th day ulcers began to form in area of musculo- cutaneous nerve sup- ply. Gradual failure of health; amputation of thigh 58th day after ligature. Left with numerous small ulcers on stump. Cavity suppurated freely, and 3 months after the operation an attack of erysipelas. Wound healed on dis- charge.
54. 1889	A. McD., clerk	39	M.	Pain 2 weeks	Chancere, skin eruption, and iritis 9 years' pre- viously	No history	— 102-8° surface; temp. of body	Digital compression 9 hours; pulsation ceased in 5 hours. Pulsation commenced again next day, com- pression 6 hours; 3rd day 10 hours; 4th day 7 hours; pulsation then finally ceased	—	51	C.	Sac hard and much smaller on discharge.



No. under treatment.	Artery affected. Name. Occupation.	Age.	Sex.	Duration of symptoms.	Syphilis.	Trauma.	Situation of aneurism.	Treatment.	Nature of ligature.	No. of days in hosp.	Result.	Notes.
55	H. G., policeman (see Case 18)	31	M.	Pain 2 months	—	—	Left, fusiform, extending into thigh	Digital compression 7 hours, no result; ligature of superficial femoral at apex of Scarpa's triangle	Silk;	130	C.	—
56	W. C., policeman, labourer	27	M.	Pain 2 months; tumour 2 weeks	—	—	—	Flexion with pad, followed by consolidation; 2 months later sac incised and clot turned out; some subsequent suppuration	—	150	C.	—
57. 1890	W. B.	25	M.	Pain and oedema of leg and foot 14 days	Chancre and suppurating glands	Strain in slipping off kerb; swelling noted next day	About the size of a pigeon's egg	Ligature of superficial femoral at apex of Scarpa's triangle on 8th day	Strong silk; coats not ruptured	85	C.	Brother undergoing treatment for aneurism at Cambridge at same time.

TABLE II.—*Ligature.**Ligature as Sole Method of Treatment.*

No.	Position of aneurism.	Time of compression.	Interval in treatment.	Artery ligatured.	Material.	Result.	Remarks.
<i>Upper extremity.</i>							
6	Axillary	—	—	3rd part subclavian	Catgut	C.	Pulsation in radial noted on 2nd day.
7	Axillary	—	—	3rd part subclavian	Catgut	C.	—
9	Axillary	—	—	3rd part subclavian	Catgut (drainage)	C.	Tied close to margin of scalenus.
<i>Lower extremity.</i>							
20	Iliac	—	—	External iliac	Kangaroo tendon	C.	Ligatured 1 inch above aneurism, 1½ inch below bifurcation. Small aneurism opposite groin.
21	Ilio-femoral (right)	—	—	External iliac	Kangaroo tendon	D.	Sloughing of skin. Died after three rigors. P.M. — Aneurism solid; pericarditis with effusion; emphysema, granular kidneys. Ligature undiscovered.
23	Ilio-femoral, right (see popliteal, Case 43)	—	—	External iliac	—	R.	Popliteal aneurism same time. Slight recurrent pulsation in iliac artery on discharge.
35	Popliteal	—	—	Femoral (apex Scarpa)	—	C.	—
49	Popliteal	—	—	Femoral (apex Scarpa)	No. 4 silk (coats not ruptured)	C.	—
50	Popliteal	—	—	Femoral (apex Scarpa)	Silk (drainage)	C.	—
52	Popliteal (left)	—	—	Femoral (apex Scarpa)	Kangaroo tendon (surgical knot)	C.	Ulcers area supplied by musculo-cutaneous nerve. Amputation of thigh 58th day after ligature.
57	Popliteal	—	—	Femoral (apex Scarpa)	Strong silk (coats not ruptured)	C.	Ulcers appeared on stump. Brother with aneurism.

*Ligature following Compression (Digital).*

No.	Position of aneurism.	Time of compression.	Interval in treatment.	Artery ligatured.	Material.	Result.	Remarks.
5	<i>Upper extremity.</i> Axillary	50 hours	14 days	Above and below sac	—	C.	—
25	<i>Lower extremity.</i> Common femoral	?	?	External iliac	Kangaroo tendon (no drainage)	C.	Some suppuration of wound.
28	Superficial femoral (left)	30 hours	7 days	Superficial femoral (apex Scarpa)	Chronicised catgut (drainage)	C.	Digital compression caused sloughing of skin; wound suppurated, and ligature came away.
35	Popliteal	6 days (intermittent)	14 days	Superficial femoral (apex Scarpa)	—	C.	—
41	Popliteal (diffused, left)	18½ hours	2 days	Superficial femoral (apex Scarpa)	—	C.	—
45	Popliteal (left)	6½ hours	7 days	Superficial femoral (apex Scarpa)	Strong catgut	C.	—
47	Popliteal (left)	14 hours	?	Superficial femoral (apex Scarpa)	Kangaroo tendon; reef knot with extra loop (coats not ruptured)	C.	—
48	Popliteal (right)	12 hours	10 days	Superficial femoral (apex Scarpa)	Silk (vessel divided between two ligatures)	C.	4 years previously left popliteal had been cured by ligature, after unsuccessful digital compression.
55	Popliteal (left)	7 hours	?	Superficial femoral (apex Scarpa)	Silk (coats not ruptured)	C.	—

*Ligature following Esmarch.*

14	<i>Upper extremity.</i> Radial (art. venous)	6 hours	?	Brachial, radial, and ulnar	Silk	C.	—
24	<i>Lower extremity.</i> Common femoral (right)	1 hour 20 minutes	?	External iliac	Silk	C.	Small abscess in cicatrix.

49	Popliteal (left)	Various	14 days	Superficial femoral (apex Scarpa)	Stout silk (coats not ruptured)	C.
<i>Incision—Ligature of Proximal and Distal Ends.</i>						
<i>Upper extremity.</i>						
12	Radial	—	—	Radial	—	C. Recurrent hæmorrhage 3rd day. Artery disorganised 1 inch.
13	Radial	—	—	Radial	—	—
18	Superficial palmar arch	—	—	Superficial palmar arch	—	C. Followed two attacks recurrent hæ- morrhage.
19	Superficial palmar arch	—	—	Superficial palmar arch	—	C. —
<i>Lower extremity.</i>						
53	Popliteal	—	—	Popliteal and both tibials	Silk (division of vessels)	C. Cavity suppurated freely. Attack erysipelas 3 weeks after operation.
<i>Excision of Sac—Ligature of Proximal and Distal Ends.</i>						
<i>Upper extremity.</i>						
16	Radial	—	—	Radial	Silk	C. Original wound treated by pressure.
17	Ulnar (left)	—	—	Ulnar	Silk	C. —
<i>Amputation followed immediately by Ligature.</i>						
<i>Lower extremity.</i>						
22	Ilio-femoral	—	—	External iliac	Carbolised catgut	D. Gangrene of foot; albuminuria. Died 33rd day. P.M.
<i>Fleision with Pad, followed by consolidation. Sac incised and clot turned out.</i>						
<i>Lower extremity.</i>						
56	Popliteal	—	—	—	—	C. Sac incised 2 months after consolida- tion, and clot turned out. Some subsequent suppuratation.



TABLE III.—*Compression.*

No.	Position of aneurism. Artery compressed.	Hours.	Hours till cessation of pulsa- tion.	Grounds for pulsation choice.	Gau- grene.	Local slough- ing.	Unsuc- cessful, &c.	Remarks.
<i>Upper extremity.</i>								
4	Axillary: 3rd part subclavian	D. C. 11½ hours	—	—	—	—	U.	Weight rested on aneurism 24 hours. Esmarch to limb. Improved.
5	Axillary: 3rd part subclavian	D. C. 50 hours	—	—	—	—	U.	Ligature above and below sac.
10	Brachial: brachial	D. C. 10; after Esmarch 1 hour	—	—	—	—	U.	Galvano-puncture; Esmarch.
14	Art.-venous, radial: brachial	D. C. 6 hours	—	—	—	—	U.	Flexion; Esmarch's bandage; ligature.
15	Radial T.: radial and ulnar	D. C. 24 hours	—	—	—	—	U.	Ligature and excision.
<i>Lower extremity.</i>								
24	Common femoral: femoral	Esmarch 1 hour 20 minutes; abdominal tourniquet	—	—	—	—	U.	Ligature of external iliac.
25	Common femoral: femoral	—	—	—	—	—	U.	Ligature.
26	Superficial femoral: femoral	Petit's tourniquet 12 hours; digital compression 4	1	—	—	—	C.	—
27	Superficial femoral: femoral	D. C. 25½ hours	—	Ext. valv. disease	—	Of skin	C.	—
28	Superficial femoral: femoral	D. C. 30 hours	—	—	—	—	U.	Compression of femoral sac.
30	Popliteal: femoral	D. C. 76 hours	60	—	—	—	C.	—
31	Popliteal: femoral	Esmarch 55 minutes; tour- niquet: 18½ hours full pres- sure, 9½ light pressure	—	—	—	—	C.	—
32	Popliteal: femoral	Esmarch 55 minutes; tour- niquet 3 hours 20 minutes;	—	—	—	—	C.	—

33	Popliteal: femoral	digital compression 11½ hours; recurrence in 2½ hours; Esmarch 4th day; pulsation ceased in 5 hours	2	—	—	—	C.	—
34	Popliteal: femoral	Esmarch 1 hour; digital compression 4	7	—	—	—	C.	—
35	Popliteal: femoral	Esmarch 1 hour; digital compression	—	—	—	—	U.	Flexion and ligature.
39	Popliteal: femoral	6 days on and off	8	—	—	—	C.	Returned with thoracic aneurism.
40	Popliteal: femoral	D. C. 8½ hours	11	—	—	—	C.	—
41	Popliteal: femoral	Esmarch 13 hours	—	—	—	—	U.	Ligature.
42	Popliteal: femoral	D. C. 18½ hours	—	—	—	—	D.	Died of sepsis.
43	Popliteal: femoral	D. C. 9 hours	—	Aortic disease	2nd day	6th day	D.	Death, but aneurism cured. General arterial degeneration well marked.
44	Popliteal: femoral	D. C. 12½ hours	—	—	—	—	C.	—
45	Popliteal: femoral	D. C. 9½ hours	6	—	—	—	U.	Ligature.
46	Popliteal: femoral	D. C. 6½ hours	—	—	—	—	U.	Galvano-puncture.
47	Popliteal: femoral	D. C. 24 hours	—	—	—	—	U.	Ligature.
48	Popliteal: femoral	D. C. 14 hours	—	—	—	—	U.	Ligature.
51	Popliteal: femoral	D. C. 12 hours	—	—	—	—	U.	Ligature.
		Flexion 7 days; Esmarch 1 hour; digital compression, weight, flexion, elevation						
54	Popliteal: femoral	9 hours, 2nd day 6, 3rd day 10, 4th day 7	27	—	—	—	C.	—
55	Popliteal: femoral	D. C. 7 hours	—	—	—	—	U.	Ligature.



# SULPHONAL AND HÆMATOPORPHYRINURIA.

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THE occurrence of hæmatoporphyrin in the urine of patients who have been taking sulphonal has of late been reported by several observers abroad, and by Garrod in this country, the cases in which it was found by the latter observer being those of patients under treatment in Bethlem Hospital, whose urine he examined for the purpose of ascertaining to what extent that body can be proved to exist in the urine of patients taking this drug.

The three cases which I have grouped together in this paper seem to me to be of sufficient interest to publish, as the symptoms associated with the presence of hæmatoporphyrin in the urine were of sufficient intensity to give rise to anxiety as to the patients' state. One patient died, though this would probably have occurred in her case under any form of treatment. I am not aware whether similar symptoms have been observed by those engaged in the treatment of patients mentally diseased in this country.

CASE 1.—M. H. M—, female, æt. 58, single, admitted to Bethlem Hospital, February 15, 1892. A maternal aunt had died of "softening of the brain," and a brother was said to be incompetent for business and to be subject to asthma.



She had always been subject to bad headaches, and had been subject to periods of elation and depression, though never to an extent to be considered abnormal; the catamenia had ceased for eight years, and there was no definite cause to account immediately for her breaking down mentally. Three months before admission she had been noticed to lose interest in her surroundings and to be "nervous." She then became gradually more depressed, believing that she had committed an unpardonable sin, that she was tempted by Satan, and that there was no room in her abdomen for food. On admission she was found to be suffering from melancholia, with a great deal of agitation, and with well-marked delusions as to the state of her viscera. She believed her bowels were so obstructed that she could not take food in consequence, but although she was undoubtedly constipated, the bowels acted after medicine, and there was no physical sign of any visceral disease. She always, however, complained of general abdominal pain. She remained for a time in this state, having to be fed with the nasal tube, against which she offered the most strenuous resistance, moaning and crying all day about the state of her abdomen. From March 1st to March 30th, she took paraldehyde at night, but as there was no improvement in her condition, and she seemed to be wearing herself out with agitation, restlessness, and deficient sleep, sulphonal was given in nightly doses of gr. 30 from the last-mentioned date. This was continued for a month, with only slight improvement in her condition as regards sleep, and with no improvement whatever in her general conduct, there being the same persistent refusal of food, and necessity for artificial feeding, and the same delusions as to her bodily health as before. During the last week of April it was noticed that she was sick on several occasions after feeding with the soft œsophageal tube, but no great importance was at first attached to this. At the same time she had some diarrhœa, which was thought possibly to be due to the fluid diet, which contained eggs. On April 29th it was noticed that her urine (which on admission was of sp. gr. 1035, and showed a trace of albumen) was dark red in colour, and somewhat resembled port wine in appearance. The sp. gr.

was 1017, it was acid, contained no albumen, no bile or blood, and no deposit of any kind. The nature of the pigment was unknown to me, but it was suggested by Drs. Durham and Bedford Pierce, who were at that time Clinical Assistants at Bethlem, that possibly we had to do with hæmatoporphyrin. A sample of the urine was sent to Dr. C. A. MacMunn, who reported that undoubtedly the urine in this case owed its colour to hæmatoporphyrin and pathological urobilin, and suggested that probably this was due to sulphonal. The patient had an increase of the abdominal pain and discomfort she had always suffered from since admission, but no physical signs of any coarse disease could be made out. Her mental condition, however, rendered any examination very difficult. The administration of sulphonal was discontinued, and morphia hypodermically was substituted. The diarrhœa ceased, but there was no improvement in other respects. The bowels again became confined, and had to be moved by enemata; pain in the abdomen and sickness continued in spite of feeding by nutrient suppositories and entire rest to the stomach, and the pulse became very feeble. The urine continued to show the same dark colour till death, which occurred on May 11th, after a return of diarrhœa. The hæmacytometer showed 4,600,000 corpuscles per c.mm. Estimation of hæmoglobin did not show any deviation from the normal. Post mortem there was found to be old adhesion of the great omentum to the cæcum, and to the abdominal wall in the right inguinal region. The stomach was somewhat contracted and hour-glass shaped, and the small intestine was contracted and empty but not constricted. Both in the stomach and intestine there was much post mortem staining and injection of vessels, and in the ileum there were one or two patches of submucous hæmorrhage.

CASE 2.—M. E. B—, æt. 55, female, admitted to Bethlem Hospital, September 10th, 1892. She had had one previous attack of insanity twenty years before, and her daughter had suffered from an attack in 1891, from which she recovered in Bethlem Hospital. Anxiety about her daughter's illness and pecuniary troubles appeared to be the immediate

forerunners of the present attack. She had been suffering from mental depression for about a month before admission, believing it to be her duty to do penance for her sins, and refusing food in consequence, and at the same time losing proper consciousness of the external world, which she believed to be altered, all her relatives appearing to be changed and unreal.

On admission she was found to be in the same state, and needed artificial feeding. There was much resistance to feeding and to all necessary attentions on the part of the nurses, and gradual loss of flesh took place. Early in October she made a serious, but ineffectual, attempt to injure her eye in response to what she thought was the will of God, and there was increased resistance and trouble in managing her. At the end of October (28th) sulphonal was ordered to be given every night in doses of gr. 30. She took this regularly till December 5th, with great improvement in the matter of sleep, and with much less resistance to feeding, though she would not take food voluntarily. It was then noted that she vomited after feeding, and complained of abdominal pain, and at the same time there was constipation. On December 8th she still had severe abdominal pain, mainly in the epigastric region; the vomiting had ceased, but she was being fed entirely by nutrient suppositories, and on this day the urine was noticed to be dark in colour. On December 11th she was better; there was no vomiting, the pain, which had been relieved by morphia injections, seemed to be less, and she was able to take jelly without increase of pain and without vomiting. The urine still was of a dark red colour. She now seemed quite rational, recognised the absurdity of her former delusions, and was anxious to take food by the mouth. Beyond the slight return of the pain at the end of December there were no further unpleasant symptoms, the urine, however, still continued to be dark and reddish in colour for a fortnight, gradually resuming its normal appearance. Unfortunately the mental improvement was not maintained, and at the present time she is as bad as when she was first admitted.

The urine was sent to Dr. MacMunn, who made the following report:—

"The urine is of a deep brown red colour. Sp. gr. 1019. Reaction acid. Contains no blood or bile pigment as such. No detectable proteid.

"Spectrum. It gave the spectrum of neutral hæmatoporphyrin, the band in red being uncertain, those in green distinct. There was also a dark band at F.

"The hæmatoporphyrin was precipitated out by Sal-kowski's method, and an attempt to get it out by A. E. Garrod's method failed. This hæmatoporphyrin was then got into solution by decomposing the barium precipitate by alcohol acidulated with sulphuric acid, and filtering. The red filtrate gave the spectrum of acid hæmatoporphyrin, while there was also a broad band broader than that of urobilin at F. This filtrate was then agitated with chloroform, which remained, however, quite colourless; agitation also with ether failed to extract the pigment. Amyl alcohol, however, extracted a little. By no treatment could this hæmatoporphyrin be obtained pure, nor could its spectrum be got free from the band at F.

"The filtrate from the barium precipitate was of an orange colour and gave only the spectrum of pathological urobilin. It was precipitated by neutral and basic acetate of lead and filtered; this filtrate was colourless. This colourless filtrate became red on trying Jaffy's test, but the red pigment could not be extracted with ether or chloroform.

"The lead precipitate was decomposed with alcohol and sulphuric acid and filtered; the filtrate showed only the spectrum of pathological urobilin, and on evaporation left it as a reddish brown amorphous mass. This was only partially taken up by chloroform, the portion insoluble in chloroform being taken up by alcohol. These solutions, viz. the chloroform and the alcohol solutions, although giving the same spectrum, yet on further testing with ammonia and zinc chloride, behaved slightly differently, so that there were really two urobilins or urobilin-like pigments present. Both, however, showed spectra, proving that they are derived from hæmatin or hæmatoporphyrin. Evidence of the presence of a chromogen which gradually changed to hæmatoporphyrin was also obtained. Hence in



this urine there were: (1) Hæmatoporphyrin slightly different from the ordinary kind; (2) two urobilins or urobilin-like bodies; (3) a chromogen changing into hæmatoporphyrin; and (4) a chromogen reddening with Jaffy's test, similar to that found by Hammarsten. There were also other pigments present, whose nature could not be determined."

CASE 3.—E. L. S—, female, single, æt. 36, admitted to Bethlem Hospital on July 26th, 1892. There was no history of insane or neurotic inheritance. Her breakdown was attributed to overwork and worry in connection with a business she had started, the early symptoms being sleeplessness, depression, and dislike to her relatives, the attack developing into a well-marked condition of melancholia, with the feeling that she ought to be punished for great wickedness, that her soul was lost, that mesmerists had power over her, and culminating in a condition of great restlessness and agitation with a desire to injure her father, or else to escape from him by injuring herself. This was her condition on admission, and soon she had to be fed artificially, in consequence of her suspicion of everything that was done for her, and she offered great resistance to washing and dressing. In consequence of sleeplessness, sulphonal was at first given on August 1st, and continued from then till September 6th, in doses of gr. 30, at first on alternate nights, and then, as the sleep was very deficient, every night. From September 6th to September 13th the drug was omitted, as the sleep had much improved and she was less restless and much more manageable. From September 3rd to 6th there was slight diarrhœa. On September 13th, as the sleep had gradually diminished from seven hours a night to none, and she was as restless as before, the drug was resumed. During October, November, and December sleep was very variable, sometimes being absent and at other times only two or three hours in the night, though occasionally as much as six or seven hours. The administration of sulphonal was continued with occasional intermissions when the sleep improved, and without any evidence of its producing any bad effect. It was omitted from January 15th to the 24th and then resumed, as sleep

again disappeared. The early nights of February were as follows :—

February 1st	.	.	Sulphonah	.	.	Sleep, 1 hour.
„ 2nd	.	.	No Sulphonah	.	.	„ 3 hours.
„ 3rd	.	.	Sulphonah	.	.	„ 6 „
„ 4th	.	.	„	.	.	„ 2 „
„ 5th	.	.	„	.	.	„ 1 „
„ 6th	.	.	„	.	.	„ 3 „

It was noted that she was gradually improving, and taking more interest, and losing hallucinations. There was still, however, resistance to food, but no disturbance of the gastro-intestinal tract, and no staggering gait appeared. Sulphonah was continued nightly till March 5th, and was then stopped. No bad symptoms had appeared. The amount of sleep had been four, five, or six hours a night. After the omission of the drug her condition remained about the same till the night of March 9th, when she was sick twice. She then had pain in the epigastrium, not increased by pressure. During the next few days vomiting occurred at intervals, and took place not only after food, but at other times, and there was a good deal of epigastric pain and prostration. Constipation was present. The symptoms were not relieved by opium, and small quantities of iced milk and soda and brandy were not retained. Resort was had to nutrient suppositories, and nothing given by the mouth; but there was still vomiting from time to time of mucus and bile, but no blood, and there was copious salivation. The temperature for a few days was slightly raised, and was generally about 100° in the evening. The symptoms were relieved by poultices to the abdomen, and morphia hypodermically, and in a week from the onset she was much better, and asking for food by the mouth. On March 11th (two days after the onset of the symptoms) it was noted that the urine presented the same appearance as in the two former cases, and its quantity for the twenty-four hours became reduced to twenty ounces. The occurrence of menstruation, however, interfered with any further examination. The urine continued to be dark in colour for a fortnight from the onset of symptoms, and then gradually resumed its normal appearance. Three examinations of the blood with the hæmacytometer and hæmoglobinometer gave varying

results, the mean, however, showing some deficiency both of corpuscles and hæmoglobin. During the presence of the acute symptoms the mental state improved very considerably, and she became quiet and rational. She has remained, on the whole, better than before the occurrence, but is not yet well mentally.

The presence of hæmatoporphyrin in the urine was first described by MacMunn in the case of a patient suffering from acute rheumatism. Since then it has been found present in the urine in association with a large number of different diseases, and of 200 cases examined by Garrod ('Journal of Pathology and Bacteriology,' vol. i, No. 2, October, 1892), in only fifty-two was no hæmatoporphyrin found. The last observer also found it present in minute quantities in the urine of healthy persons. Salkowski ('Centralblatt für med. Wiss.,' 1891, No. 8, p. 129) described three cases in women, one of which ended fatally, which he supposed to be due to the administration of sulphonal, the symptoms being, in his opinion, due to individual idiosyncrasy. He quoted a fatal case described by Stokvis, also occurring in a woman after the use of sulphonal. In the 'Skand. Archiv für Physiologie,' 3, 319-343, is a paper by Hammarsten, in which are reported four cases of hæmatoporphyrinuria in women suffering from insanity, who had been treated with sulphonal. In one of these the patient first was found to have hæmatoporphyrinuria nine days after the drug had ceased to be administered, and the patient died twelve days subsequently, the cause, however, not being stated. Another patient died of broncho-pneumonia eight days after the first appearance of hæmatoporphyrinuria. In the 'Deutsche med. Wochenschrift' for June 16th, 1892, is a paper by Sobernheim, who considers that hæmatoporphyrinuria often results from the use of sulphonal, though not invariably, and gives a case in which it was present in association with typhoid fever. No sulphonal had been given, and he attributes the symptom to absorption of colouring matter from a hæmatoma in the rectus abdominis. He considers the presence of hæmatoporphyrin in the urine as not necessarily harmful.

Garrod, in the paper referred to above, gives the results

of his examination of the urine of ten patients of both sexes who had been taking sulphonal in Bethlem Hospital for varying periods and in varying amounts. In none of these was the pigment in larger quantity than is often present in the urine of gouty or rheumatic patients, and in the cases in which he found hæmatoporphyrinuria in considerable amounts there were no other unfavorable symptoms. The presence of hæmatoporphyrin in the urine of patients who have been taking sulphonal is not necessarily, therefore, associated with other symptoms due to that drug.

In the 'Allgemeine Zeitschrift für Psychiatrie,' Band xlix, Heft 4, is given a digest of a paper by Adolf F. Jolles, in the 'International Klinische Rundschau,' Nos. 49 and 50, on the "Chemical Composition of the Urine after Sulphonal Intoxication." He examined the urine of four cases of sulphonal poisoning, and in addition to hæmatoporphyrin, found albumen, pepton, renal elements, reducing substances (? glycuronic acid) and unaltered sulphonal. He recommends suspension of the administration of sulphonal when the urine presents the colour due to hæmatoporphyrin.

In the 'Brit. Med. Journal Supplement' for April 1st, 1893, in a notice of a paper by E. Schaefer, in the 'Therap. Monatshefte,' February, 1893, quoting a case in which a patient had taken about six ounces of sulphonal in nine months. Hæmatoporphyrin then appeared in the urine, associated with gastric and hepatic pains, constipation, irregular temperature, and failing strength. The red corpuscles are described by Schaefer as being deficient in numbers and not forming rouleaux. The gastric irregularity and constipation are attributed to cerebral causes from intoxication of the blood. Dr. Savage has allowed me to refer to a case occurring in his practice in which an old gentleman had for over a year taken sulphonal in doses of gr. 20 to 25 nightly for sleeplessness, when hæmatoporphyrinuria occurred, associated with gastro-intestinal disturbance.

It is worthy of note that in the cases I have recorded above the patients were all of the female sex, and it will be seen that the cases published by Salkowski, Stokvis, and Hammarsten were in the same sex. In the urines of both sexes from this hospital examined by Garrod hæmatopor-



phyrin was found. In the 'Lancet' for 1890, p. 607, two cases of hæmatoporphyrinuria in women, associated with gastric symptoms, are reported by Ranking and Pardington, but no sulphonal had been administered. Dr. Copeman showed the urines of these patients at the Pathological Society in January, 1891, and suggested that the presence of constipation led to the absorption of poisonous products from the intestine, and thus led to alterations in the blood. In connection with this it is worth noting that the three patients whose cases I have recorded all suffered from melancholia, with refusal of food, and all had evidence of the sluggish and unhealthy state of the gastro-intestinal tract which is so commonly present in that condition; but I prefer to leave the question as to the change taking place in the blood and urinary pigments to those who are more familiar with physiological chemistry.

Examination of the blood in two of my cases did not show evidence of greater diminution of blood corpuscles or hæmoglobin than is commonly met with in melancholia, and this agrees with Garrod's opinion, that there is no relation between the changes in the number and worth of the corpuscles and the appearance of hæmatoporphyrin in the urine. Jolles (op. cit.) recommends suspension of the administration of sulphonal when the urine presents the colour due to hæmatoporphyrin, but in all my cases symptoms of gastro-intestinal disturbance (pain, vomiting, constipation, or diarrhœa) appeared before there was noticeable alteration in the colour of the urine, and the occurrence of such symptoms should cause one to suspend the use of the drug rather than wait for the evident presence of hæmatoporphyrin. In the third of my cases the drug had been suspended before the occurrence of any symptoms, and Hammarsten seems to have had the same experience. In all my cases there was complete absence of the symptoms generally looked for in connection with sulphonal, viz. drowsiness, slow speech, and tottering inco-ordinate gait. The symptoms seemed to point definitely to direct gastro-intestinal irritation, as the result of the drug, and I am inclined to think that sulphonal ought not to be administered to patients suffering from melancholia, with refusal of food and

evidences of defective intestinal action, and where probably the drug lies longer in contact with the mucous membrane of the stomach before absorption, than in cases suffering from maniacal excitement. Schaefer (op. cit.) considers the gastric irregularity and constipation to be due to cerebral causes, from intoxication of the blood with sulphonal, but I think, from observation of my cases, that though there were gastric and intestinal symptoms, due to the primary cerebral disorder, the additional acute gastric symptoms were due to direct irritation by sulphonal, and not merely to intoxication. Whether the hæmatoporphyrinuria was due to intoxication is, however, a matter I do not pretend to decide. But I may refer to MacMunn's opinion ('British Medical Journal,' January 3rd, 1891), that when the glands whose function it is to change effete blood-colouring matter to a simpler substance are diseased, and therefore incapable of metabolising a normal amount of it, hæmatoporphyrin may occur in the urine. It is quite possible that this is the case in melancholia, and uro-hæmatoporphyrin being considered a reduction product of blood pigment, its occurrence may perhaps be explained in cases such as I have described by the special liability of patients suffering from melancholia, to deficient oxygenation of blood, as is so frequently shown by their sluggish circulation and congested venous system.

I am greatly indebted to Dr. MacMunn for his kindness in examining the urine.



# THE HISTORY OF TRANSFUSION.

WITH SHORT NOTES OF CASES IN WHICH THE METHOD OF  
INFUSION OF SALINE FLUID INTO THE VEINS HAS  
BEEN ADOPTED.

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By BERNARD PITTS.

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IN Villory's life of Savanarola we read that in the early part of the fourteenth century, Pope Gregory VIII (exhausted by old age) was transfused by a Jewish doctor with the blood of three boys—with the hope that he would be rejuvenated. The pope died—and so did the boys. It was an experiment stated to have only been previously done on animals. In 1665, Dr. Lower, of Oxford University, injected with success blood into the veins of a dog. The physicians of Bedlam were then applied to for a suitable patient to experiment on, but they had scruples, and refused. About two years later a French mathematician named Denis, associated with a surgeon, tried the experiment on a man. They had long been on the look-out for a suitable case, when an opportunity presented itself. One evening a madman, quite naked, arrived in Paris, and was boldly seized upon by the mathematician as a good subject for the new experiment.

Eight ounces of calf's blood were injected into his veins,



and that night the madman slept. The following day the injection was repeated, and the man slept again and awoke sane. Shortly after, Dr. Lower was able to inform the Royal Society that Dr. Arthur Coga was willing to allow the operation of transfusion to be tried on him for the consideration of one guinea. This gentleman was a Bachelor of Divinity of Oxford, and described as one of weak intellect who spoke Latin well. The operation was performed November 23rd, 1667, at the Royal Society, in the presence of a bishop, several members of Parliament, physicians, &c., and eight ounces of blood were withdrawn and replaced by that of a sheep. After the transfusion, Dr. Coga drank several glasses of wine and smoked a pipe of tobacco. At the following meeting of the Society he appeared in person, and read a paper in Latin giving an account of all his symptoms. He said that the sensation was so pleasant that he would willingly be transfused again, and this was done, three weeks later, before a great crowd of spectators. When he appeared at the next meeting of the Society, he stated that the operation was followed by fever, which had since subsided. Some of his friends, however, insinuated that the fever was really due to the potations he indulged in after the transfusion. Years later, Dr. Coga was in good health, but eccentric as ever. Tidings of these successful transfusions flowed over Europe, and in Italy and Germany this new treatment was repeated. It was hoped that by the transfusion of blood from some mild-tempered animal like a calf or sheep, the blood of a madman would be so transformed as to give him the inoffensive characteristics of the animal chosen. These hopes were soon dispelled, the patient on whom Denis had operated went mad again, was again transfused, and died during the operation. The son of the Swedish minister at Paris, who had been benefitted by one transfusion, died under a second, and so on. In April, 1868, the Parliament of Paris made criminal any attempt to transfuse, except by consent of the Faculty of Paris. The first real advance in our knowledge was made when Leacock, in 1817, and Blundell, in 1825, drew attention to the marked difference in the result, according as the blood transfused was obtained from an animal of the same species, "similar blood,"

or from an animal of another species, "dissimilar blood." The later researches of Panum and others fully established that this difference was due to the poisonous action of the hæmoglobin of dissimilar blood in the organism.

In 1862 a very successful case was reported by Prof. Nusbaum. A young man, aged nineteen, was so exhausted after excision of the knee, that death was imminent; the pulse could not be felt, and the extremities were cold. Venesection was performed on several persons, so that the Professor came into possession of one pound of blood. This was beaten for eight minutes, filtered through fine linen, and the glass containing the blood was then put into a basin filled with hot water, until the temperature of the blood was 100° F. The blood was then slowly injected into the patient by means of a small glass syringe, with precautions to avoid the entrance of air. During the operation the patient perceived a sensation of pleasant warmth, and a short time afterwards the pulse could again be felt. So soon as the patient had sufficiently recovered, amputation of the thigh was performed, and the lad ultimately made a good recovery.

Panum, in 1863, advocated transference of defibrinated blood to the entire exclusion of pure blood, urging as one of its advantages that large tanks of it could be kept ready for use on the field of battle. I saw this method tried once in 1873 by Mr. Wagstaffe at St. Thomas's Hospital. Blood was freely given by a number of dressers, one or two of whom fainted in consequence of their generous gift and the heat of the small ward crowded with students. The patient rallied a little, but died soon after—septicæmia and exhaustion.

In 1876 Dr. Roussel, of Genoa, showed, at the Royal Medical and Chirurgical Society, his very ingenious apparatus for direct transfusion. Before applying it to the arm of a man who was seated at the table, Dr. Roussel explained the construction of the instrument, which he had devised in 1864, but which had not received much attention until 1876. The object of the apparatus was to prevent coagulation of the blood that is drawn, and therefore to do away with the necessity for defibrination.

An article in the 'Lancet' on this demonstration sums up thus: "The admirable construction of the instrument, the readiness with which it can be applied, and the rapidity with which the operation can be performed, together with the great advantage of its not requiring the blood to be defibrinated previous to injection, were features which were well appreciated by the spectators.

"With reference to the experiment itself, it may be hoped that the willingness with which the subject of it submitted to shed his blood for the sake of science and humanity, may serve as a timely rebuke to those earnest enthusiasts who have of late striven to arrest progress in this cause by their unmeaning outcry against experimentation on animals. They will see that even human beings are not deterred from submitting themselves to a vivisection involving some risk and certain inconvenience, when the object in view is an addition to our means of saving life."

Shortly after this demonstration, Dr. Roussel was present at the London Hospital when Mr. James Adams was amputating at the hip-joint for advanced disease of the hip. After removing the limb and tying the vessels, Mr. Adams supplied six ounces of blood from his own arm to his patient. The latter improved notably after the transfusion, whilst the surgeon, with his arm bandaged, proceeded on his way with the rest of the operation. The lad succumbed two days after.

This ingenious method of direct transfusion during the next few years was extensively tried, and though occasional success was recorded, yet, unfortunately, the method was found too complicated for actual practice.

I have tried it on several cases of impending death from hæmorrhage. Volunteers were always ready to give their blood, but the instrument was rarely in satisfactory working order for an emergency; the mechanism gets a little out of order, and after two or three ounces of blood perhaps have been transfused, some clot forms, and the transfusion fails at the critical moment. Transfusion usually requires to be done in a hurry, and the opportunity often arises when one is least prepared to meet it. It was a consolation in our failures to remember having seen Roussel fail in carrying

out a transfusion with his own instrument, at a prepared demonstration he gave in the theatre of St. Thomas's Hospital.

MacEwen, in 1879, published a case of antiseptic transfusion in a patient the subject of hæmorrhage a few hours after a lateral lithotomy. The patient, a man, was semi-insensible, and could not speak; pulse at the wrist imperceptible; surface of body blanched; restless tossing of the limbs, with deep inspirations. MacEwen explained the conditions to a man in the ward, who was strong and healthy except for a damaged toe, and this man freely gave his blood, which was received into a small, warm, carbolised vessel, and at once drawn into a carbolised 3 oz. syringe. This was injected into the cephalic vein of the patient, then the syringe was washed in 1 in 80, re-charged, and so on, the operation being done under the spray.

Shortly after transfusion the pulse gradually returned, the surface of the body became warm, and the patient recovered.

The more care that is taken in this operation, the less likely is it that a septic condition will be induced, but injection of pure blood, or defibrinated blood, though it may occasionally be introduced without producing unfavorable symptoms, yet it must be attended by great uncertainty of action, and though sometimes be quite harmless, yet at other times highly dangerous, the chief danger being a wide-spread capillary thrombosis in various parts of the body, more especially in the smaller arterioles and capillaries of the lungs.

In the hope of avoiding these dangers, Mr. Cotterill introduced into Edinburgh in 1886 a method first suggested by Dr. Hicks, viz. infusion of a mixture of blood and saline solution, a 5 per cent. solution of phosphate of soda, *i. e.* one ounce to a pint of distilled water.

In the 'British Medical Journal' of October 2nd, 1886, a case is recorded of hæmorrhage after amputation of thigh, when Mr. Annandale injected on four occasions four to six ounces of blood, mixed with two ounces of the saline solution.

Mr. Cotterill says in his remarks, "There can be no doubt



that the operation of transfusion is destined to hold a far more prominent position than it has hitherto done. This is due to the fact that the method of operation has been simplified and perfected, and that the complicated forms of transfusion instruments are now no longer necessary !” The Edinburgh surgeons were so satisfied with this method of infusing blood, that it became the practice in any severe amputation to collect and reinfuse the blood (otherwise lost), mixing it with the phosphate of soda solution, taking care that the blood was fresh and not contaminated with septic organisms.

In the ‘Lancet’ of April 16th, 1887, Mr. Warrington Hayward published a successful case of transfusion in a boy aged fourteen, who was collapsed from hæmorrhage into subperiosteal abscess of thigh. Six ounces of blood were taken from the boy’s father, and mixed with two ounces of the saline solution. The effect was striking and immediate. The pulse became perceptible ; the boy regained consciousness, and made a good recovery. Mr. Hayward remarks “that the simplest apparatus is apt to become clogged if unmixed blood is passed through it ; and the complicated instrument of Dr. Roussel is not an exception.”

I now come to the most important substitution for transfusion, viz. the infusion of simple saline fluid in large quantity. Sir Spencer Wells, in 1848, at the St. Giles’s Workhouse, injected saline solution into the veins of some cholera patients. In one case the injection was performed upon a man apparently dead. Some few minutes after the heart could be felt to beat ; it was followed by a return of pulsation, warmth, and consciousness, and the patient lived for a few hours afterwards.

In 1872 Wagstaffe, for the collapse due to hæmorrhage, injected a pint and a half of water, to which a little milk had been added. The patient temporarily improved, but died later of collapse.

Charles Jennings, at the suggestion of Sir Spencer Wells, performed some experiments on dogs on the Continent, in reference to the toxic action of chloroform on the blood. He was so surprised at the success with which saline fluid injected into the veins restored these dogs after they had

lost large quantities of blood, that he wrote a letter to the 'British Medical Journal' in 1885, strongly advocating the injection of harmless fluid, as a substitute for blood, in certain cases of hæmorrhage; and on October 28th, 1886, he delivered an address at Woolwich on this method of infusion for hæmorrhage in military surgery, and quoted several successful cases. I will refer to two of them.

On August 20th, 1882, he injected eighteen ounces of saline fluid into the veins of a woman about to die from ante-partum hæmorrhage. Re-animation speedily followed the saline infusion, and she was delivered one and a half hours later, and recovered.

On September 22nd, 1885, he injected twenty-two ounces into a patient almost moribund from uterine hæmorrhage, and he states that twenty-two ounces was the minimum quantity necessary to effect its purpose.

The fact that this method of infusing saline fluid in large quantity into the circulation is harmless, and often of great value, was not until quite recently sufficiently appreciated by the profession. For years the method has been well known to experimental pathologists and workers in physiology, and it has been a constant practice to thus resuscitate animals exhausted by loss of blood; and it was well known that a dog deprived of blood to a degree which would be fatal, could be immediately and permanently restored by such infusion.

William Hunter's valuable lectures on transfusion, delivered at the College of Surgeons in 1889, deal at length, both from an experimental and a physiological point of view, with the dangers of, and objections to, transfusion of blood, whether by the direct method, or after defibrination, or admixture with phosphate of soda solution; and these lectures fully confirm the value and absolute freedom from risk of the infusion of normal saline fluid. William Hunter sums up thus:

"Any advantages that transfusion of red corpuscles may have over simple saline injections are counter-balanced by the dangers attending the simultaneous injection of the white. In the case of defibrinated blood the latter so preponderate that transfusion of defibrinated blood is an oper-

ation not only dangerous in itself, but one whose practical value by no means serves to compensate the additional risks run in carrying it out."

For practical purposes all the advantages to be gained by transfusion may be equally well and more readily obtained by an infusion of a neutral saline, such as a solution of common salt, ʒj. to Oj.

Amongst other physiologists who had been working at transfusion was the late Dr. Woolridge, and Mr. Arbuthnot Lane, remembering his advocacy of the saline infusion, saved in this way a girl who was apparently dying from hæmorrhage after a cleft-palate operation. His account is briefly as follows:—Girl, aged 13; operation on palate, September 2nd, 1891, at 1.30; bleeding followed, and at 11.30 the pulse was running, and not to be counted. Three and a half pints of normal saline fluid were introduced into the left basilic vein. The first pint made no difference; after the second pint the pulse could be counted at about 160. By the end of injection the pulse was 80, and her appearance had completely changed. From cold and blanched her face became more or less rosy, hot, and moist.

In order to make as clear as possible the advantages of this method of saline infusion, I give here the following extract from Dr. Hunter's last lecture:—"If the condition to be met in transfusing blood is a threatened failure of circulation as the result of sudden loss of blood, then it is unnecessary to have recourse to blood transfusion, since an infusion of any saline meets equally well, if not better, all the indications. The value possessed by transfused blood in such cases is almost solely in virtue of its physical properties. The chief physical property of blood for purposes of transfusion is undoubtedly its volume. The immediate source of danger from sudden loss of blood is the fall in the blood-pressure to a point when the circulation is unable to be maintained. The obvious indication, therefore, is to raise the pressure within the vessels. It is only after severe hæmorrhage that the relation between the vessels and the amount of blood they contain is disturbed; the pressure falls rapidly and suddenly, and death will ensue unless means be taken to meet the threatened failure of circulation. The

readiest way in which this can be done is to replace the lost blood with a certain amount of fluid. In an emergency, the infusion of ordinary water has been followed by results as successful as any ever obtained after the transfusion of blood.

“Whatever advantages transfusion of blood may have in restoring the tone of the vaso-motor centres, are more than neutralised by the other and still greater disadvantages, viz. : (1) The difficulty of obtaining blood in sufficient quantity and with sufficient rapidity, as compared with the ease with which simple saline fluid can be prepared. (2) The danger attending the transfusion of blood, compared with the absolute freedom from danger possessed by the saline solution. (3) The doubtful value of the transfusion, whether hæmogenic or physical, when compared with the saline.

“Under no circumstances is the transfusion of milk, or of other mixtures possessing what are supposed to be nutritive properties, ever indicated.”

For the following abstract of cases of infusion done at St. Thomas's Hospital I am indebted to the Resident Assistant Surgeon, Mr. Stabb. The method employed is charmingly simple, and could be extemporised at once, without loss of time, at, say, a hæmorrhage after confinement. There is plenty of evidence in these cases that the infusion was of great service at the time, and certainly no ill effects ensued. In several cases operations which otherwise could not have been performed, were enabled to be carried out, and thus a chance given for saving life. The large quantities of injection used in some of the cases, especially in the condition of diabetic coma, is especially interesting. The proper amount of fluid to infuse must evidently depend on the effect produced in the individual case. Without discussing the value of the treatment in diabetic coma, or in collapse from diarrhœa, I will only add that all the cases were clearly in a hopeless state, and infusion gave the one chance of recovery, and that in no single instance was there evidence post mortem of any ill effects produced by the injection.

*The method in use is as follows:—*Boiling water is added to distilled water until the temperature is 100° F. Common salt is added ʒj to Oj. Most convenient vein is selected ;



dissected free, and ligatured below. An incision is then made into the vein above ligature. A nozzle, connected by rubber tube to a glass funnel, is introduced into the vein, and fixed by a ligature passing round vein and nozzle (apparatus having first been filled with solution to prevent entrance of air into vein).

The quantity introduced varies from one to eight or ten pints, depending upon the effect produced. The pulse usually commences to improve after introduction of about one pint. In the adult five to six pints enter the circulation with ease, taking about twenty minutes, after which the progress is slower. Very little pressure is required, the funnel being held from one to two feet above the level of vein.

Male, æt. 29.—Nephrectomy for sarcoma of kidney. Lost considerable quantity of blood at operation. Twelve hours later he became cold, unconscious, and apparently pulseless. Conjunctival reflex absent. Six and a half pints saline solution infused into median cephalic vein. Pulse gradually improved, and patient became conscious, expressing himself as feeling comfortable; skin warm. He slept for two hours, but died five hours later.

Female, æt. 16.—Stabs of neck, chest, and arms; wound of lung; collapsed and blanched on admission; severe attack of hæmorrhage from deep wound of neck after admission. Pulse feeble and thready; surface cold; patient restless. Six pints saline solution infused into median basilic vein caused rapid improvement, and she quite recovered from the loss of blood. Peritonitis and empyema followed; the latter became very septic, and patient died after three weeks. Post-mortem showed that one of the stabs had opened pleura and peritoneum, and passed through lung and spleen into stomach.

Female, æt. 66.—Lacerated wound near urethra. Patient on admission almost moribund from hæmorrhage. Five pints saline solution injected into median basilic vein, causing great improvement. Pulse became good, and surface of body warm. Patient recovered from loss of blood, but wound became very sloughy; rigors commenced on the eighth day, and she died on the thirty-eighth day.

Male, æt. 40.—Ruptured spleen (after fall of fifteen feet).

On admission too collapsed to admit of operation. Next day signs of intra-abdominal extensive hæmorrhage, but patient still very collapsed. Four pints saline solution infused into median basilic so improved his condition that operation was decided upon (pulse fell from 128 to 95); seventy-five ounces of blood were found in abdomen and removed; a ligature was passed round the splenic vessels. At the end of operation five pints more of solution were infused into the internal saphenous vein at ankle. Patient recovered well from the collapse, but developed peritonitis on the third day, and died from this on the fifth.

Male, æt. 24.—Kick on abdomen by horse; extreme collapse. Abdominal section, and three complete ruptures of intestine were found. Considerable hæmorrhage had taken place into the abdominal cavity. During operation patient became so bad that five pints saline solution were injected into his median basilic vein. This so improved his condition that the operation of suturing the ruptured bowel was able to be completed. The patient did very well for six days, but died from giving way of intestine at seat of suture.

Male, æt. 4½.—Extensive lacerated wound of leg; extreme shock. Next day two pints saline infused into median basilic vein. Pulse and respiration temporarily improved, but patient died eight hours later.

Male, æt. 33.—Diabetes; absolute coma. Six pints of saline infused into basilic vein. After introduction of four pints patient raised his head and moved his arms; after six pints he became conscious, answering when spoken to, and giving his name in full. Pulse had fallen from 80 to 72. Patient, however, relapsed into a comatose state again, and died ten hours later.

Male, æt. 50.—Diabetes; absolute coma. Thirteen pints saline solution infused in one and a quarter hours. No good effect produced. Death in a few hours.

Female, æt. 2.—Profuse diarrhœa and vomiting six days; collapse. Sixteen ounces infused into femoral vein, as superficial veins could not be seen. Temporary improvement only, child dying twelve hours later.

Female, æt. 47.—Abscess of abdominal wall; diabetes. Coma set in day after abscess was opened. Eight and a half

pints saline infused into median basilic. Pulse improved, and temperature rose from subnormal to normal. Regained consciousness for a short period, but died from relapse next day. The urine, which was free from albumen before infusion, contained it the following day.

Female, æt. 33.—Convalescent from white-leg, suddenly attacked with profuse diarrhœa, and became collapsed, unconscious, cyanosed and pulseless. Seven pints saline solution infused into median basilic; improved condition at once; pulse became fairly good, and consciousness returned. She, however, relapsed and died, a further infusion of three pints producing no effect.

Male, æt. 13.—Comminuted fracture of head of humerus, and great swelling at seat of injury; was admitted three weeks after the accident. The temperature was  $104^{\circ}$ , and clot evidently suppurating. A free incision was made, and the clot washed out. A week later he had hæmorrhage from the wound and was in a very exhausted condition; the wound was opened up, the head of bone removed, and some bleeding points secured. His condition was so bad, that three pints of saline were infused, and he at once rallied, and recovered from the immediate effects of the hæmorrhage.

Female, æt. 32.—Thin and weak from very large fibroid of uterus, and bleeding. The operation for removal was attended with unusual difficulty and hæmorrhage, and the patient was so bad on the operating table that five pints of saline had to be injected. A day and a half later this patient seemed almost moribund, with uncountable pulse. Three pints of saline were again infused. She rallied in a wonderful manner, and at the end of a week was progressing favorably.

Female, æt. 13.—Removal of sarcoma of lower jaw, involving parotid and orbital regions. The unavoidable loss of blood during the operation was such as to cause great collapse and impending death on the table. During the latter part of the operation two and a half pints of saline (water taken from the tap) were infused into the saphena vein with great benefit. It was found impossible to completely eradicate the growth, but the child rallied, and made

a good recovery from the operation. The saphena vein was chosen so as not to interfere with the manipulations of the operator.

At Great Ormond Street Hospital for Children, the saline injection has been tried in a few cases of severe collapse from diarrhœa. The fluid has been introduced by a syringe, with special two-way tap. In young children it is often difficult, from the small size of the vein opened, to get the fluid to pass into the vein, and hence a syringe is necessary. In the 'Lancet' of January 9th, 1892, a case is recorded by Dr. Collier, then House Physician, of a child aged nine months, admitted under the care of Dr. Sturges, cold, pale, shrivelled looking, and with sunken orbits. The history was that of severe diarrhœa, and vomiting of two days' duration. Eight hours after admission, in spite of restoratives, the child was still more collapsed and seemed near to death. Dr. Collier injected with the double nozzle syringe, twelve ounces of distilled water, containing 36 grains of common salt, and 1·3 of alcohol, at temperature of 101° F. The reaction was immediate; the pulse became bounding, the face flushed. Two hours later the temperature was 104·2°, but gradually fell, and was normal in thirty-six hours. The child was afterwards treated with compressed Ipecac. powder, and made a good recovery.

William I—, æt. 2.—Admitted under Dr. Sturges, with diarrhœa; was transfused twice for extreme collapse, half a pint injected each time. Some improvement followed, but the diarrhœa continued, and death ensued two days later.

M. H—, æt. 10 months (under Dr. Sturges).—Transfused three times, for diarrhœa and collapse, fifteen, sixteen and twenty ounces of salt solution being introduced. There was improvement after each injection.

The main object in quoting these cases is not to advocate infusion in cases of collapse from diarrhœa, but to show how harmless such injection seems to be in even very young children. A rise of temperature following the injection has, however, been noted in two of these babies, a condition not to be wondered at considering the age. I shall be fully satisfied if I induce confidence in others to make use of so simple a remedy, which seems specially adapted for cases of



grave hæmorrhage, more especially such as any practitioner may at any time meet with after a confinement.

In cases of collapse from hæmorrhage, when the pulse can still be counted, and a grave issue is not so directly impending, much may be done by bandaging the extremities, by warmth to the surface, the injection of alcohol under the skin, and saline injection into the rectum; but when from loss of blood the circulation is so feeble as to be likely at any moment to stop, then no time should be lost, but immediate intra-venous injection be made.

Of the value of Münchmeyer's method of injecting simple saline fluid into the cellular tissue, I have no experience. An aspirator needle is thrust into the subcutaneous tissue (between the scapulæ for preference). To the needle is attached two or three feet of india-rubber tubing leading down from a funnel. The saline fluid is poured into the funnel, and is dispersed in the cellular tissue by gentle massage. This method, at the last epidemic, was tried on some of the cholera patients at Hamburg, and the effect said to be immediate and marvellous, patients apparently without pulse sometimes recovering. But in most cases the effect does not last long, and a relapse frequently follows. With ordinary care, and especially if the funnel be used, there is no danger of air entering the vein. It is only when a vein at the root of the neck is opened, and kept open by the structures around, not allowing the opening to collapse, that air is likely to be sucked in with the respiratory action, so as to cause dangerous symptoms. I met with this unfortunate complication once, and never shall forget it. A gentleman was under ether for the removal of a large glandular tumour in the posterior triangle of the neck. Whilst dragging on the tumour to get at its posterior connections, a vein was opened, and several curious suction sounds were heard, and immediately the patient was in a desperate condition from failure of pulse and respiration; his extremities were cold, and the aspect of face that of a dying man. I placed my finger at once on the position of the opened vein, which was indicated by a few bubbles of blood. Brandy and water was injected into the rectum, and ether under the skin; the limbs were

rapidly raised and bandaged, and hot flannels applied to the cardiac region. So soon as the wounded vein could be secured with forceps, artificial respiration was commenced, and after ten anxious minutes we had the satisfaction of seeing our patient gradually come round; but his circulation was extremely rapid and irregular for some hours. Sir James Paget, who was present at the operation, had never before seen the accident occur, an important testimony to its rarity. The vein opened was a branch from the deep plexus, which was adherent to the glandular mass. So grave for a time was the patient's condition, that neither Sir James Paget nor myself expected he would come round. Probably under chloroform the air would not have been sucked in; he was breathing with great force at the time.

In considering the history of the introduction of transfusion, it is very instructive to reflect on how our knowledge of the subject was started by experiment, has been from time to time during the last three centuries corrected and advanced by experiments. How much we are indebted to those pathologists and physiologists who devote their time and energy, not as some imagine in the mere pursuit of scientific knowledge, but in the perfection of the means of saving life and relieving suffering, in man and beast alike.

Appended are a few cases in which transfusion has been done since this paper was written.

Male, æt. 14.—Admitted April 9th, 1893, with punctured fracture of skull, produced by pitchfork thrown from top of haystack. Puncture in skull about posterior superior angle left parietal bone, close to mid-line. Patient unconscious. Trephined soon after admission, and loose fragments of bone removed. Considerable hæmorrhage took place from the superior longitudinal sinus, and this became most alarming. Patient became collapsed, and was infused with two and a half pints of saline solution into right median basilic vein. This had a good effect upon the pulse, but only increased the flow of blood from under the trephine opening. Every other means having failed, the hæmorrhage was controlled by means of sponge pressure and a fairly tight

dressing. Patient still unconscious, and died two and a half hours after operation.

At the post-mortem it was found that the tear of the sinus was very extensive, and the laceration of brain extended into the lateral ventricle, which was full of blood. The bleeding from the wound had almost ceased when the fluid was injected, and it was remarkable how immediate was the flow of very thin blood from the wound.

Male, æt 29.—Admitted April 26th, 1893, with strangulated hernia of three days' duration, vomiting fæculent matter. Extreme collapse. Pulse could not be felt at wrist. Extremities very cold. Temperature  $95.6^{\circ}$ ; respiration shallow.

Removed to theatre and incision made into sac; stricture divided; bowel, which was in rather doubtful condition, returned, and omentum removed. The whole operation lasted only a few minutes, and practically no anæsthetic was required.

Patient was so extremely collapsed as to appear dying on the table. Four pints of saline solution were infused into left median basilic vein, containing three ounces of brandy. The effect was like a resurrection. During the infusion the pulse appeared at the wrist strong and full. The body became warm and the cheeks flushed. Patient became quite conscious, and presented the appearance of a man slightly under the influence of alcohol. This good condition lasted for about five hours, when the pulse began to fail. An hour later (six hours after first infusion) the same amount of saline fluid and alcohol was again infused, this time into the right median basilic vein. The same effect, but to a less degree, was produced as before. It was not so lasting, however, and patient relapsed again in about two hours, and died suddenly seven hours after the second infusion, apparently from syncope during the act of vomiting.

F., æt. 25.—Admitted May 2nd, in state of collapse, with distended abdomen, containing free fluid and gas. The symptoms had appeared suddenly, and suggested perforation of gastric ulcer.

Patient was too bad for any operation, being almost pulse-

less, extremely cold, and she was breathing so shallowly that it was difficult to detect respiration at all. She was removed to the theatre for infusion, in the hope that she might rally enough to justify operation. Four ounces of saline solution, containing one ounce of brandy and one and a half ounces of absolute alcohol, were infused into right median basilic vein, with such good effect that exploration was able to be done. A perforation was found on outer wall of stomach and sewn up, the abdominal cavity being irrigated well with boracic lotion.

The operation lasted an hour, and patient left the theatre in very fair condition, pulse being regular and moderately strong, and surface of body warm.

Three hours later the pulse began to fail, and patient to become very restless and cold. Four pints of saline solution, with two ounces of absolute alcohol, were now infused into opposite median basilic veins, with the effect that patient became quite jovial and made a joke. She relapsed again very soon, and in an hour was as bad as before, dying three and a half hours later—six and a half hours after operation.

*Two additional Cases of Transfusion of Saline Solution for Hæmorrhage at Children's Hospital, Great Ormond Street.*

1. Female child, æt. 3.—Operation April 10th, 1893, for mastoid caries. During operation lateral sinus and dura mater covering temporo-sphenoidal lobe exposed, and seen to be covered with thick lymph.

Two days after operation patient had sudden profuse hæmorrhage from the wound. A plug was introduced, which stopped the hæmorrhage. Child was extremely blanched; eyes wide open and turned upwards; gasping for breath. The legs were held vertically and bandaged, the body rubbed in an upward direction; some ether injected into left arm.

The median basilic vein in right arm was exposed, and a few ounces of saline solution (3j to Oj) injected slowly. There was rapid improvement in the condition—colour returned to the lips, pulse could be felt easily in brachial artery, and the child cried. She was kept warm, with the legs raised, and seemed fairly well for two hours, when she suddenly



became collapsed, and died before infusion could be performed again.

*Post mortem.*—The hæmorrhage had come from inferior petrosal sinus, in which there was a thrombus, with an ulcer in the wall opposite to it.

2. T. T—, æt. 2.—Operation December 14th, 1892 ; removal of left testicle for tubercular disease, cord tied and divided high up. On the evening of the day of operation hæmorrhage occurred. On removing the blood-soaked dressings, the scrotum was very much distended with blood-clot. This was all removed, and forceps applied to a bleeding point high up, close to external abdominal ring.

Child was very cold, white, and nearly pulseless. The median basilic vein in left arm was exposed, and four to six ounces of saline solution (3j to Oj) infused slowly. Patient rallied, but was very ill for the next few days ; white, anæmic, listless, with sordes on teeth and lips. Temperature very high and irregular. The wound healed without suppuration, and his condition improved slowly for a fortnight, when he developed measles. During convalescence he developed general tuberculosis, of which he eventually died, a little more than three months after the operation.

# CASE OF PANCREATIC CYST.

## SUCCESSFUL REMOVAL.

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BY S. J. SHARKEY, M.D., AND H. H. CLUTTON, F.R.C.S.

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E. J—, æt. 38, a married woman, was admitted into St. Thomas's Hospital under Dr. Sharkey's care on November 4th, 1892. Her father and mother had lived to a good old age, and there was nothing of note in the history of her relations. She had had three miscarriages, two children had been born dead at the seventh month, and two were living.

The patient asserted that at sixteen years of age she had a squeeze in the abdomen, and suffered from pain in the left side, but from nothing else.

At twenty-two years of age she was in Smedley's Hydropathic Institution on account of nervous debility, and the doctor pointed out a swelling in the left side of her abdomen, which she had not noticed before. In February, 1889, she had a miscarriage, and was unable to get about for two months, being confined to the sofa, and suffering from a severe dragging pain on the left side of the abdomen, which extended into the left groin. At the same time she lost her appetite and suffered from nausea and flatulence. Her doctor said the left side was swollen. Being never free from pain, and noticing that the swelling increased, she came up to the hospital, and was admitted under Dr. Cullingworth on October 30th, 1890.

A moveable globular tumour was then found on the left

side of the abdomen, and its position could be freely altered beneath the abdominal wall; it could be pressed upwards, downwards, or across the middle line.

On the right side the kidney was felt to be moveable.

On November 4th 2½ drachms of fluid were removed with a fine trocar; this was pale yellow and on boiling became nearly solid.

According to the patient's statement, which was confirmed by Dr. Cullingworth, the tumour disappeared, and she was discharged from the hospital on November 19th, 1890.

In the next eighteen months she had occasional pain, but not enough to make her lie up. At the end of this time she again noticed the swelling, and as it continued to increase she again saw Dr. Cullingworth. She was pregnant at the time, and was advised to wait until after her confinement before she submitted to any treatment.

After her accouchement, which resulted in a seven months' dead child, the pain increased and she lost appetite, so she again came to Dr. Cullingworth. At the end of October Mr. Clutton and Dr. Sharkey saw her with him, and the consultation resulted in her being admitted under Dr. Sharkey on November 4th. She was then a healthy-looking, well nourished woman, and complained of dragging pains in the left side of abdomen, which were relieved by rest in bed.

On inspection the abdomen proved to be a little unsymmetrical, being fuller on the left than on the right. This was due to the presence on the left side of a very moveable, globular, elastic tumour, about the size of a coconut. It was generally situated just below the left costal margin, but could be moved to the middle line of the abdomen, downwards at least to the brim of the pelvis, and upwards, but in the latter direction it could never be got into the position naturally occupied by the left kidney. On examining the lower dorsal and lumbar regions behind they appeared to be symmetrical, and there was no evidence to be obtained that the left kidney was not in its normal position. The percussion note was dull over the tumour.

The right kidney was felt to be somewhat moveable.

Urine had sp. gr. 1020, was acid, and contained no albumen or sugar.

All the organs appeared to be healthy.

While she was in the medical ward before the operation she complained a good deal of pain, which she generally referred to the left hip, and she had some indigestion. The urine was always scanty, generally not more than twenty to thirty ounces.

November 19th, 1892.—Mr. Clutton opened the abdomen in the median line. The cyst was found to have no connection with the left kidney or with the pelvic organs, but was seen to be situated behind the great omentum, between the stomach and transverse colon. The omentum was gently torn through and a few ligatures applied. The globular cyst was at once and quite easily lifted out through the wound on to the abdominal parietes, bringing with it, but without any traction, the tail of the pancreas. The cyst was quite free from attachment to any other structure. It could not be removed from the pancreas without cutting through some of the glandular substance. The splenic artery and vein were found lying on the posterior surface of the cyst-wall, and had to be separated from it by a very careful dissection. The area of attachment or incorporation of the cyst with the pancreas was about two inches in diameter. The cyst was successfully removed, without any leakage of its contents. The cut surface of the gland required many ligatures to arrest bleeding, and even then it continued to ooze, apparently on account of its friable nature, which made it difficult to apply a ligature without tearing some of the surrounding tissue. A glass drainage-tube was on this account inserted before the closure of the wound with salmon-gut sutures.

For two days after operation she suffered from frequent vomiting, but the temperature remained normal. The drainage-tube was then shifted and the vomiting ceased. It is possible that the end of the tube was pressing on some portion of the cœliac plexus. The glass tube was emptied by a pipette three times a day, but the quantity of fluid secreted was so large that in the intervals between its use a double layer of wood wool tissue was rapidly soaked through, although there was a fair amount of cyanide gauze round the end of the projecting tube. For the first two days the



fluid was blood-stained, and then became quite clear. This was thought to be pancreatic secretion. Some of it was, therefore, collected for examination by Professor Dunstan, who has kindly furnished a report, which will be found at the end of this paper. At the bottom of the tube there was always a certain amount of gelatinous or "ropy" looking substance which gradually increased proportionately to the total amount of discharge. She was fed in the ordinary way, like any other abdominal case, and so far as we could judge, the introduction of food into the stomach produced no material alteration in the quantity or quality of the discharge. She seemed perfectly well, and had no real pain, nor had she any symptoms that need be detailed beyond the discharge of this fluid. The sutures caused some local suppuration, and were removed on November 30th. From December 9th to 29th the discharge from the tube steadily diminished. The tube was removed on December 29th, and the abdominal wound was practically healed on January 6th, 1893. She left the hospital perfectly well, and with an abdominal support, on January 11th.

After the operation was finished the cyst was opened and the fluid examined. In colour it was bright canary yellow, and turbid with cholesterine. On boiling a small quantity and adding acetic acid it became almost solid. The addition of potash to some of the fresh fluid produced very little alteration. The remainder was handed over to Professor Dunstan, who reported as follows :

"The first specimen of fluid from the abdominal cyst which you sent here on November 19th bears a general resemblance to pancreatic fluid, as the following analytical data show :

Sp. gr.	.	.	.	.	1.010
Total solids	.	.	.	.	2.18 per cent.
Ash	.	.	.	.	0.52    "    "

*"Percentage composition of total solids.—*

Albumen	.	.	.	.	.	1.60
Fat	.	.	.	.	.	traces.
Extracts, soluble in water	.	.	.	.	.	0.06
Sodium chloride	.	.	.	.	.	0.192
Sodium carbonate	.	.	.	.	.	0.252
Phosphates	.	.	.	.	.	0.074

“ Further examination, however, showed that the liquid was unable to emulsify fat, to convert starch into sugar, or to digest fibrin. It therefore cannot be regarded as a pancreatic fluid.

“ The second specimen of the liquid, received on November 24th (this was the fluid discharging from the wound five days after operation), was undoubtedly a true pancreatic fluid. It readily converted starch into sugar and dissolved fibrin. In other respects its composition seems to closely correspond with that of the first specimen, with the exception that it contains much more fat.”

The extreme mobility of this cyst and its attachment to the pancreas alone, without any adhesion to the structures surrounding it in the lesser peritoneal sac, render it probable that it was a pure retention cyst of the pancreas.

A very large proportion of the recorded cases of pancreatic cysts, following, as a general rule, an injury of the abdomen, have been cases in which the walls of the cavity have been adherent to all the surrounding structures in the lesser peritoneal sac. They have been successfully treated by incision and drainage for the simple reason that the walls of the cavity could not possibly be safely removed.

Such cases, as Mr. Jordan Lloyd has pointed out (*‘Brit. Med. Journal,’* 1892, vol. ii, p. 1051), are probably extravasations into the lesser peritoneal sac after an injury of the pancreas, and are more comparable with a localised peritonitis with adhesion to all the surrounding structures than a pure retention cyst of the pancreas.

This particular case forms a marked contrast to such a condition, and could not possibly be placed in this category, for it had no connection with any other structure than the pancreas.



# A CONTRIBUTION TO CRANIOLOGY.

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By F. G. PARSONS.

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FOR many years there has stood in the museum of this hospital a collection of skulls gathered from different parts of the world, and fairly representing the craniological features of the chief races of mankind. This collection, comprising some forty skulls, illustrates all the commoner deviations from the normal arrangement of the skull, in addition to showing typical racial characteristics.

The object of this paper is to furnish the measurements and capacities of these skulls, and by means of reference to the magnificent collection in the College of Surgeons' Museum to show how far they may be regarded as trustworthy types; also to record the results of a careful examination as to the osteological peculiarities of each skull.

While I was measuring this collection of human skulls, I thought it would be well to measure and examine the skulls of the anthropoid apes in our museum, partly because they ought to be measured, and partly with a view to comparing them with the lower types of the human skull.

As it only falls to the lot of a few to work at practical craniometry, it will be well to preface the descriptions with a few remarks as to the methods that have been used. In the first place, the measurements are the same as those chosen by Professor Flower in his catalogue of the College



of Surgeons' Museum ; and I should here like to express my indebtedness to Professor Stewart for the use of the College apparatus, and to Mr. M'Ara for assistance in using it.

The horizontal circumference (C) is taken from the supraorbital line above the glabella round the most prominent part of the occiput.

The length (L) is taken from the ophryon, the centre of a line drawn horizontally across the narrowest part of the forehead to the most distant point in the occiput.

The breadth (B) is the greatest parietal breadth.

The index of breadth (Bi) is obtained as follows—

$$\frac{B \times 100.}{L}$$

The height (H) is taken from the bregma, where the coronal and sagittal sutures join to the basion or anterior margin of the foramen magnum.

The height index (Hi) =  $H \times 100.$

$$L$$

The basinasal length (BN) is measured from the basion to the nasion, the middle of the naso-frontal suture.

The basialveolar length (BA) from the basion to the alveolar point, the centre of the anterior margin of the upper alveolar arch.

The alveolar index (Ai) =  $BA \times 100.$

$$BN$$

This gives the amount of prognathism, and is a most important characteristic of race.

The nasal height (Nh) from the nasion to the lower border of the nasal aperture.

The nasal breadth (Nw) the greatest width of the nasal aperture.

The nasal index (Ni) =  $Nw \times 100.$

$$Nh$$

The orbital width (Ow) from the point where the ridge forming the posterior boundary of the lachrymal groove meets the fronto-lachrymal suture to the most distant point on the outer edge of the orbit.

The orbital height (Oh) taken at the middle of the anterior aperture of the orbit.

$$\text{The orbital index (Oi)} = \frac{\text{Oh} \times 100}{\text{Ow}}$$

The figures in all these linear measurements represent millimetres.

The capacity (Cap) is taken by filling the cranium with shot and then measuring it under an equal pressure.

The figures represent cubic centimetres.

With these preliminary remarks I will record the examination of the individual skulls in the order they hold in the Museum.

No. 1 (A Skull from Waterloo).—C 540, L 188, B 148, Bi 787, H 134, Hi 713, BN 108, BA 106, Ai 981, Nh 57, Nw 27, Ni 474, Ow 39, Oh 32, Oi 820, Cap. 1450.

As the breadth index of this skull is between 750 and 800, it is said to be "mesaticephalic." The alveolar index is between 980 and 1030—it is therefore "mesognathous."

The nasal index is below 480, so that it is "leptorhine," while the orbital index is below 840, which makes it "microseme." The capacity is between 1350 and 1450 inclusive, so that it is "mesocephalic," but just on the border line between that and "megacephalic." The average of mixed European skulls in the College Museum are mesaticephalic, orthognathous, leptorhine, mesoseme, and megacephalic. This skull, therefore, is somewhat below the average. On examination it is a well-marked, heavy male skull, the muscular markings are well seen, and the external pterygoid plates much developed; that on the left side joins the sphenoidal spine.

2. Hindoo.—C 502, L 184, B 126, Bi 685, H 132, Hi 717, BN 103, BA 62, Ai 602, Nh 52, Nw 25, Ni 482, Ow 37, Oh 35, Oi 946, Cap 1360.

The skull is dolichocephalic, markedly orthognathous, mesorhine, megaseme, and mesocephalic. It is, except for the orbital index, above the average of Hindoo skulls. The right jugular foramen and fossa are very large.

3. Probably a Lascar.—C 515, L 183, B 139, Bi 760, H 126, Hi 689, BN 101, BA 99, Ai 980, Nh 55, Nw 21, Ni 382, Ow 38, Oh 34, Oi 895, Cap 1425.

Mesaticephalic, mesognathous, leptorhine, megaseme, and mesocephalic. Above the average of its class. The

right external pterygoid plate almost joins the sphenoidal spine.

4. Probably a Lascar.—C 532, L 183, B 149, Bi 814, H 137, Hi 749, BN 98, BA 91, Ai 929, Nh 46, Nw 19, Ni 413, Ow 35, Oh 32, Oi 914, Cap 1507.

Brachycephalic, orthognathous, leptorhine, megaseme, megacephalic. Lascars are usually Mussulmans, and their skulls are higher in the scale than those of Hindoos. This, however, is a good skull, even for a Mussulman. The cranium is asymmetrical, larger on the left than the right. The face, however, is symmetrical.

5. Chinese.—C 492, L 175, B 138, Bi 789, H 124, Hi 709, BN 98, BA 92, Ai 939, Nh 51, Nw 26, Ni 510, Ow 37, Oh 33, Oi 892, Cap 1250.

Mesaticephalic, orthognathous, mesorhine, megaseme, microcephalic. A lower type than the Chinese average. The condyles are short and flat, and pathological changes have occurred in the skull.

5A. Chinese executed by decapitation.—C 468, L 160, B 135, Bi 844, H 131, Hi 819, BN 95, BA about 88, Ai 926, Nh 45, Nw 23, Ni 511, Ow 35, Oh 32, Oi 914, Cap 1275.

Brachycephalic, orthognathous, mesorhine, megaseme, microcephalic.

The skull is very spherical. On the left side there is an epipteric bone. There are traces of the suture between the basioccipital and the sphenoid. There are no signs of the last molars.

6. Javanese.—C 497, L 171, B 141, Bi 825, H 140, Hi 819, BN 102, BA 101, Ai 990, Nh 59, Nw 28, Ni 475, Ow 39, Oh 35, Oi 897, Cap 1500.

Brachycephalic, mesognathous, leptorhine, megaseme, megacephalic.

The brachycephaly is characteristic of Malays; they are, however, usually mesocephalic. The zygomatic processes of the maxilla are very massive, causing the lower part of the malar to project further than the upper. The sphenoidal fissure is large on the right side.

7. Javanese.—C 509, L 171, B 146, Bi 854, H 134, Hi 784, BN 98, BA 99, Ai 1010, Nh 57, Nw 26, Ni 456, Ow 38, Oh 34, Oi 895, Cap 1450.

Brachycephalic, mesognathous, leptorhine, megaseme, mesocephalic. A fairly typical Malay skull. The malars are prominent as in the last. Probably a female.

8. Mummified head of a male Maorie, showing the growth of hair and the tattooing.

9. American Indian.—C 519, L 185, B 137, Bi 741, H 130, Hi 703, BN 99, BA 96, Ai 970, Nh 51, Nw 23, Ni 451, Ow 39, Oh 32, Oi 820, Cap 1510.

Dolichocephalic, orthognathous, leptorhine, microseme, megacephalic.

There is usually a tendency to prognathism in American Indians, with a low nasal index; the other characters are very variable. The capacity of this skull, however, is decidedly large, although, from the damaged condition of the occipital region, it was difficult to measure it exactly. It apparently belong to a male.

10. American Indian.—C 542, L 191, B 149, Bi 780, H 141, Hi 738, Bn 101, Ba 106, Ai 1050, Nh 54, Nw 29, Ni 537, Ow 43, Oh 33, Oi 767, Cap 1560.

Mesaticephalic, prognathous, platyrhine, microseme, megacephalic. The breadth of the nasal aperture is the chief distinction between this and a typical American Indian skull. The capacity is very great. The malar is prominent, as in the Malay's. On the left side there is a prominent paroccipital process, bearing a facet for articulation with the atlas. The orbits show immense depressions for the lachrymal sacs. The skull is apparently that of a male.

11. Knistenaux or Southward Indian from Hudson's Bay.—C 505, L 176, B 145, Bi 824, H 141, Hi 801, BN 103, BA 91, Ai 883, Nh 53, Nw 24, Ni 453, Ow 39, Oh 32, Oi 820, Cap 1420.

Brachycephalic, orthognathous, leptorhine, microseme, mesocephalic.

A fairly typical skull. The nasal bones are well formed, broad, and of nearly equal breadth all the way down. There is a prominent tubercle on the basioccipital behind the pharyngeal spine. Both condyles have a transverse furrow across them.

12. American Indian skull artificially deformed by frontal pressure.—C 512, L 177, B 144, Bi 814, H 125, Hi 706,



BN 93, BA 90, Ai 968, Nh 52, Nw 25, Ni 482, Ow 38, Oh 40, Oi 1053, Cap 1370.

Owing to the artificial deformity the indices are of very little value as racial characteristics. The skull is rendered brachycephalic, and the orbital width is exceeded by the orbital height, a most unusual thing in human skulls. The frontal region is flat, and slopes upwards and backwards; the occipital region is correspondingly enlarged. The right squamous bone articulates with the frontal.

13. Probably an American Indian.—Skull artificially deformed by vertical pressure. C 523, L 187, B 135, Bi 722, H 106, Hi 566, BN 89, BA 81, Ai 910, Nh 43, Nw 19, Ni 442, Ow 36, Oh 33, Oi 917, Cap 1340.

Dolichocephalic, orthognathous, leptorhine, megaseme, microcephalic.

The most notable point in this skull is the flattening. Skulls usually vary in height between 120 and 140 mm.; this one, however, only measures 106 mm. The height index, instead of varying between 700 and 800, is only 566. The pressure from above has apparently produced the marked elongation, which has the appearance of being greater than it really is on account of the flattening. The forehead rises vertically for about two inches, and then joins the vertex almost at a right angle. The anterior inferior angles of the parietals are produced into tongue-like processes. The skull appears to have belonged to a young individual.

14. Inca of Peru from Illo.—C 497, L 166, B 146, Bi 880, H 135, Hi 813, BN 97, BA 93, Ai 959, Nh 51, Nw 24, Ni 471, Ow 37, Oh 35, Oi 946, Cap 1310.

Brachycephalic, orthognathous, leptorhine, megaseme, microcephalic.

This may be said to be a typical Peruvian skull. There are no signs of compression. There is a well-marked interparietal bone, with a wormian bone at each of the three angles.

15. Peruvian.—Skull artificially deformed by occipital pressure. C 491, L 161, B 150, Bi 932, H 138, Hi 857, BN 101, BA 91, Ai 901, Nh 51, Nw 24, Ni 471, Ow 39, Oh 34, Oi 872, Cap 1390.

Brachycephalic, orthognathous, leptorhine, mesoseme, mesocephalic.

The occipital pressure has in this case been fairly symmetrical. Possibly the natural shortness of the head was looked upon by the Peruvians as a beauty, and induced them to increase it by artificial means. The artificial shortening has produced, as it often does in these Peruvian skulls, a narrowing of the external auditory meatus.

16. Peruvian.—C 505, L 165, B 158, Bi 958, H 133, Hi 806, BN 103, BA 97, Ai 942, Nh 52, Nw 24, Ni 460, Ow 40, Oh 38, Oi 950, Cap 1530.

Brachycephalic, orthognathous, leptorhine, megaseme, megacephalic. The cranium is shortened and distorted by asymmetrical occipital pressure. The auditory meatus is very narrow. There is a metopic suture dividing the frontal bone. There is also an "Os anti-epilepticum" at the bregma.

17. Peruvian.—C 509, L 158, B 154, Bi 975, H 134, Hi 848, BN 97, BA about 93, Ai 959, Nh 54, Nw 31, Ni 574, Ow 39, Oh 37, Oi 949, Cap 1355.

Brachycephalic, orthognathous, platyrhine, megaseme, mesocephalic.

The skull has been subjected to asymmetrical occipital pressure, and has also undergone a good deal of post-mortem damage. The auditory meatus is narrow. The anterior alveolar margin is partially destroyed, hence the basi-alveolar measurement is doubtful.

17A. Native Australian named "Boney," from the Richmond River, in New South Wales, twenty miles from the border of Queensland. He bore a very bad character, and was killed by a boomerang during a drunken *melée*. [Presented by Courtney Coward, Esq.]

C 523, L 193, B 131, Bi 679, H 138, Hi 715, BN 105, BA about 92, Ai 876, Nh 51, Nw 33, Ni 647, Ow 41, Oh 40, Oi 976, Cap 1420.

Dolichocephalic, orthognathous, platyrhine, megaseme, mesocephalic.

The skull is much damaged. There is a chain of wormian bones in the lambdoid suture. The cranium is keel-shaped, as in most Australians.

18. Australian Native.—C 497, L 179, B 129, Bi 721, H 133, Hi 743, BN 96, BA 86, Ai 896, Nh 45, Nw 26, Ni 578, Ow 40, Oh 31, Oi 775, Cap 1240.

Dolichocephalic, orthognathous, platyrhine, microseme, microcephalic.

This skull differs from that of a typical Australian in being orthognathous instead of prognathous; in all the other characteristics it is typical. It belonged to a native named Neddy, one of the Eugowra tribe, on the Lachlan river, New South Wales. The skull is more or less boat-shaped, rising to a keel in the centre, as is so often seen in Australian skulls. The left central incisor has been lost during life, having probably been knocked out at puberty. There is a transverse fracture in the frontal bone, and the left malar appears to have been fractured and displaced during life.

19. Australian Native.—C 507, L 182, B 130, Bi 714, H 133, Hi 731, BN 94, BA 96, Ai 1021, Nh 45, Nw 27, Ni 600, Ow 41, Oh 28, Oi 683, Cap 1360.

Dolichocephalic, mesognathous, platyrhine, microseme, mesocephalic.

This skull, except in the length of the head and breadth of the nostrils, is not at all typical.

The cranium is boat-shaped, as in 19. The condyles are flat and short, and there is a facet on the anterior margin of the foramen magnum for the odontoid process to articulate with.

20. Australian Native from Botany Bay.—C 497, L 174, B 135, Bi 776, H 133, Hi 764, BN 104, BA 102, Ai 981, Nh 50, Nw 24, Ni 480, Ow 38, Oh 33, Oi 868, Cap 1225.

Mesaticephalic, mesognathous, mesorhine, mesoseme, microcephalic. By no means a typical Australian skull as far as measurements go; this is, perhaps, accounted for by its having evidently belonged to a young person, as the basilar suture is present and the last molars coming through. The right central incisor has been knocked out as in No. 19, according to their custom.

21. South Australian Native.—C 532, L 186, B 150, Bi 806, H 133, Hi 715, BN 101, BA about 90, Ai 891, Nh 55, Nw 21, Ni 382, Ow 41, Oh 36, Oi 878, Cap 1575.

Dolichocephalic, orthognathous, leptorhine, mesoseme,

megacephalic. Not very typical. The alveolar margin is imperfect, hence the basi-alveolar length and alveolar index are approximate only. There is a large epipteric bone on each side, and an asymmetrical epactal bone encroaching more on the right than the left.

22. Australian Native from King George's Sound.—C 485, L 172, B 129, Bi 750, H 127, Hi 738, BN 95, BA 99, Ai 1042, Nh 45, Nw 23, Ni 511, Ow 36, Oh 30, Oi 833, Cap 1250.

Mēsaticcephalic, prognathous, mesorhine, microseme, microcephalic.

This is apparently a female skull. The teeth are perfect. The left squamosal almost articulates with the frontal.

23. Ebo Negro.—C 496, L 182, B 126, Bi 692, H 133, Hi 731, BN 104, BA 102, Ai 981, Nh 50, Nw 25, Ni 500, Ow 39, Oh 34, Oi 872, Cap 1315.

Dolichocephalic, mesognathous, mesorhine, microseme, microcephalic.

The two chief characteristics of the negro skull, breadth of nasal aperture and prognathism, are not well seen in this. The skull is probably that of a male. The incisor teeth are filed in front, and the right zygomatic arch depressed, probably by a fracture. The nasal bones, unlike those of most negroes, are narrow and well arched.

24. Ebo Negro.—C 520, L 187, B 138, Bi 738, H 139, Hi 743, BN 114, BA 112, Ai 982, Nh 53, Nw 28, Ni 528, Ow 43, Oh 36, Oi 837, Cap 1525.

Dolichocephalic, mesognathous, mesorhine, microseme, megacephalic.

The nasals are broad and flat, typically African. Only one incisor remains, but that is filed to a peg. There is a paroccipital process and a post-glenoid process on both sides. The lachrymal canal is large.

25. Negro.—C 540, L 198, B 141, Bi 712, H 130, Hi 657, BN 108, BA 114, Ai 1056, Nh 49, Nw 28, Ni 571, Ow 42, Oh 33, Oi 786, Cap 1490.

Dolichocephalic, prognathous, platyrrhine, microseme, megacephalic.

This is a fairly typical African skull. The lachrymal



canals are large, the condyles flat, the sphenoidal spines project down, and the glenoid cavities are deep.

26. Negro.—C 477, L 166, B 138, Bi 831, H 133, Hi 801, BN 96, BA 102, Ai 1062, Nh 45, Nw 23, Ni 511, Ow 37, Oh 33, Oi 892, Cap 1185.

Brachycephalic, prognathous, mesorhine, megaseme, microcephalic.

Brachycephaly is extremely rare in negroes. There is a paroccipital and post-glenoid process on both sides. The skull is remarkable for the depth of the depressions below the orbit in the region of the canine fossæ.

27. Negro.—C 483, L 175, B 136, Bi 777, H 130, Hi 743, BN 99, BA 113, Ai 1141, Nh 49, Nw 29, Ni 592, Ow 36, Oh 31, Oi 861, Cap 1320.

Mesaticephalic, prognathous, platyrrhine, mesoseme, microcephalic.

The skull is that of a female. The lachrymal canals are large and almost outside the orbital margin. The anterior and posterior clinoid processes join. The orbital plates of the frontal are very convex upwards.

28. Negro.—C 470, L 166, B 130, Bi 783, H 138, Hi 831, BN 97, BA 102, Ai 1052, Nh 48, Nw 28, Ni 583, Ow 37, Oh 35, Oi 946, Cap 1225.

Mesaticephalic, prognathous, platyrrhine, megaseme, microcephalic.

This was labelled "A skull remarkable for its rotundity," but the measurements and general characteristics leave little doubt that it is that of a negro. The occipital region slopes upwards and backwards almost in a straight line, so that the foramen magnum appears to be at the posterior part of the skull. There are small paroccipital processes. The nasals are broad and flat. The speno-maxillary fissure is broad, as is often found in negroes. The lachrymal canal is large.

29. Ashantee.—C 503, L 185, B 125, Bi 676, H 136, Hi 735, BN 116, BA 112, Ai 965, Nh 48, Nw 27, Ni 563, Ow 40, Oh 37, Oi 925, Cap 1370.

Dolichocephalic, orthognathous, platyrrhine, megaseme, mesocephalic.

There are only three Ashantee skulls in the College collection. They are all dolichocephalic and platyrrhine; two are

mesognathous and one prognathous. The orbital index varies, as also does the cephalic index. This skull has flattened condyles. The nasals are narrow but flat. There are slight paroccipital and postglenoid processes ; also a small epipteric bone on each side.

30. Native of Johana Island, near Madagascar. Female, æt. 75.—C 495, L 179, B 137, Bi 765, H 130, Hi 726, BN 92, BA 105, Ai 1141, Nh 50, Nw 25, Ni 500, Ow 38, Oh 38, Oi 1000, Cap 1330.

Mesaticephalic, prognathous, mesorhine, megaseme, microcephalic.

The cranial sutures are almost obliterated. There is a slight paroccipital process on the right side. The condyles are flat. The post-glenoid processes are small. The sphenoidal spines form two prominent tubercles.

31. Hottentot.—C 484, L 180, B 121, Bi 672, H 126, Hi 700, BN 101, BA 99, Ai 980, Nh 42, Nw 24, Ni 571, Ow 37, Oh 29, Oi 784, Cap 1115.

Dolichocephalic, mesognathous, platyrrhine, microseme, microcephalic.

As there are only two normal Hottentot skulls in the College Museum the number is too small for comparison. This skull, however, agrees fairly well with them. The nasals are broad and flattened.

32. Skull remarkable for low vertical measurement. Probably European.—C 501, L 180, B 132 Bi 733, H 123, Hi 683, BN 100, BA 93, Ai 930, Nh 51, Nw 23, Ni 451, Ow 37, Oh 34, Oi 919, Cap 1335.

Dolichocephalic, orthognathous, leptorrhine, megaseme, microcephalic.

This skull was labelled as remarkable for its length, but it is the low vertical measurement which makes it appear unusually long.

33. The upper part of a calvarium remarkable for its length.

The length is 205 mm.

34. A skull remarkable for its narrowness compared with its length.—C 518, L 192, B 126, Bi 656, H 132, Hi 688, BN 100, BA 100, Ai 1000, Nh 54, Nw 25, Ni 463, Ow 37, Oh, 31, Oi 838, Cap 1470.

Dolichocephalic, mesognathous, leptorhine, microseme, megacephalic.

This skull was labelled as remarkable for its length, but although the length (192 mm.) is above the average, the breadth (126 mm.) is greatly below.

The forehead is high and narrow. There is an epipteric bone on both sides.

35. A skull remarkable for its length.—C 542, L 196, B 141, Bi 719, H 130, Hi 663, BN 108, BA 102, Ai 944, Nh 55, Nw 25, Ni 455, Ow 42, Oh 34, Oi 810, Cap 1385.

Dolichocephalic, orthognathous, leptorhine, microseme, mesocephalic.

The skull apparently belonged to a male European.

36. A skull remarkable for its rotundity.—C 545, L 186, B 151, Bi 812, H 128, Hi 688, BN 99, BA 96, Ai 970, Nh 47, Nw 24, Ni 511, Ow 39, Oh 33, Oi 846, Cap 1640.

Brachycephalic, orthognathous, mesorhine, mesoseme, megacephalic.

Although the length of this skull is up to the average, the breadth is considerably above it; hence the latitudinal index is high and the skull is brachycephalic. The length and breadth are so great that, although the height is below the average, the capacity is very large.

The skull bulges out at the sides. The teeth, with the exception of one molar, are very perfect. It apparently belonged to a European.

37. A skull remarkable for the persistence of the interfrontal (metopic) suture.—C 496, L 175, B 133, Bi 760, H 135, Hi 771, BN 97, BA 94, Ai 969, Nh 51, Nw 24, Ni 471, Ow 38, Oh 33, Oi 868, Cap 1425.

Mesiticephalic, orthognathous, leptorhine, mesoseme, mesocephalic.

Besides the metopic suture all the other sutures are persistent. There is a wormian bone in the lateral fontanelles on each side. The skull appears to be that of a male European. No. 16 also has a metopic suture.

38. The posterior half of a skull, showing the upper part of the supra-occipital bone cut off by a horizontal suture about an inch above the external occipital protuberance.

39. A skull showing a number of wormian bones in the

lambdoid suture.—C 502, L 179, B 137, Bi 765, H 136, Hi 760, BN 102, BA 100, Ai 980, Nh 45, Nw 28, Ni 622, Ow 38, Oh 31, Oi 816, Cap 1335.

The skull is negroid in type.

Compare No. 17A.

40. Skull of male gorilla.—L 134, B 109, Bi 813, H 105, Hi 783, BN 132, BA 192, Ai 1454, Nh 97, Nw 35, Ni 361, Ow 44, Oh 47, Oi 1068, Cap 460.

Brachycephalic, prognathous, leptorhine, megaseme, microcephalic.

41. Skull of male orang.—L 128, B 114, Bi 890, H 104, Hi 812, BN 109, BA 176, Ai 1614, Nh 77, Nw 25, Ni 324, Ow 38, Oh 44, Oi 1158, Cap 490.

Brachycephalic, prognathous, leptorhine, megaseme, microcephalic.

A series of tables of the indices of the skulls examined, arranged in numerical order, will best illustrate how far they are to be relied on as a distinguishing characteristic of race in such a small collection.



TABLE I.—*Breadth Indices.*

	No. of skull.	Race.	Index.	Class.
1	17	Peruvian (deformed) . . .	975	Brachycephalic.
2	16	Peruvian (deformed) . . .	958	"
3	15	Peruvian (deformed) . . .	932	"
4	14	Peruvian (normal) . . .	880	"
5	7	Malay . . . . .	854	"
6	5a	Chinese . . . . .	844	"
7	26	Negro . . . . .	831	"
8	6	Malay . . . . .	825	"
9	11	American Indian . . . . .	824	"
10	4	Lascar . . . . .	814	"
11	12	American Indian (deformed) . .	814	"
12	36	European ? (rotundity) . . .	812	"
13	21	South Australian . . . . .	806	"
14	5	Chinese . . . . .	789	Mesaticephalic.
15	1	European . . . . .	787	"
16	28	Negro ? . . . . .	783	"
17	10	American Indian . . . . .	780	"
18	27	Negro . . . . .	777	"
19	20	Australian . . . . .	776	"
20	30	Negro . . . . .	765	"
21	39	Negro ? . . . . .	765	"
22	37	European ? . . . . .	760	"
23	3	Lascar . . . . .	760	"
24	22	Australian . . . . .	750	"
25	9	American Indian . . . . .	741	Dolichocephalic.
26	24	Negro . . . . .	738	"
27	32	European (length) . . . . .	733	"
28	13	American Indian (deformed) . .	722	"
29	18	Australian . . . . .	721	"
30	35	European (length) . . . . .	717	"
31	19	Australian . . . . .	714	"
32	25	Negro . . . . .	712	"
33	23	Negro . . . . .	692	"
34	2	Hindoo . . . . .	685	;
35	17a	Australian . . . . .	679	"
36	29	Negro . . . . .	676	"
37	31	Hottentot . . . . .	672	"
38	34	European ? . . . . .	656	"
	40	Gorilla . . . . .	813	Brachycephalic.
	41	Orang . . . . .	890	"

TABLE II.—*Alveolar Indices.*

	No. of skull.	Race.	Index.	Class.
1	30	Negro (Madagascar) . . .	1141	Prognathous.
2	27	Negro . . . . .	1141	"
3	26	Negro . . . . .	1062	"
4	25	Negro . . . . .	1056	"
5	28	Negro . . . . .	1052	"
6	10	American Indian . . . . .	1050	"
7	22	Australian . . . . .	1042	"
8	19	Australian . . . . .	1021	Mesognathous.
9	7	Malay . . . . .	1010	"
10	34	European ? . . . . .	1000	"
11	6	Malay . . . . .	990	"
12	24	Negro . . . . .	982	"
13	20	Australian . . . . .	981	"
14	1	European . . . . .	981	"
15	23	Negro . . . . .	981	"
16	39	Negro ? . . . . .	980	"
17	3	Lascar . . . . .	980	"
18	31	Hottentot . . . . .	980	"
19	36	European ? . . . . .	970	Orthognathous.
20	9	American Indian . . . . .	970	"
21	37	European ? . . . . .	969	"
22	12	American Indian . . . . .	968	"
23	29	Ashantee Negro . . . . .	965	"
24	14	Peruvian . . . . .	959	"
25	17	Peruvian . . . . .	959	"
26	35	European . . . . .	944	"
27	16	Peruvian . . . . .	942	"
28	5	Chinese . . . . .	939	"
29	32	European . . . . .	930	"
30	4	Lascar . . . . .	929	"
31	5a	Chinese . . . . .	926	"
32	13	American Indian . . . . .	910	"
33	15	Peruvian . . . . .	901	"
34	18	Australian . . . . .	896	"
35	21	Australian . . . . .	891	"
36	11	American Indian . . . . .	883	"
37	17a	Australian . . . . .	876 ?	"
38	2	Hindoo . . . . .	602	"
	40	Gorilla . . . . .	1454	Prognathous.
	41	Orang . . . . .	1614	"

TABLE III.—*Nasal Indices.*

	No. of skull.	Race.	Index.	Class.
1	17a	Australian . . . . .	647	Platyrrhine.
2	39	Negro ? . . . . .	622	"
3	19	Australian . . . . .	600	"
4	27	Negro . . . . .	592	"
5	28	Negro . . . . .	583	"
6	18	Australian . . . . .	578	"
7	17	Peruvian . . . . .	574	"
8	31	Hottentot . . . . .	571	"
9	25	Negro . . . . .	571	"
10	29	Ashantee . . . . .	563	"
11	10	American Indian . . . . .	537	"
12	24	Negro . . . . .	528	Mesorrhine.
13	36	European ? . . . . .	511	"
14	22	Australian . . . . .	511	"
15	26	Negro . . . . .	511	"
16	5a	Chinese . . . . .	511	"
17	5	Chinese . . . . .	510	"
18	30	Negro from Madagascar . . . . .	500	"
19	23	Negro . . . . .	500	"
20	2	Hindoo . . . . .	482	"
21	12	American Indian . . . . .	482	"
22	20	Australian . . . . .	480	"
23	6	Malay . . . . .	475	Leptorrhine.
24	1	European . . . . .	474	"
25	37	European ? . . . . .	471	"
26	14	Peruvian . . . . .	471	"
27	15	Peruvian . . . . .	471	"
28	34	European ? . . . . .	463	"
29	16	Peruvian . . . . .	460	"
30	7	Malay . . . . .	456	"
31	35	European . . . . .	455	"
32	11	American Indian . . . . .	453	"
33	32	European . . . . .	451	"
34	9	American Indian . . . . .	451	"
35	13	American Indian . . . . .	442	"
36	4	Lascar . . . . .	413	"
37	3	Lascar . . . . .	382	"
38	21	Australian . . . . .	382	"
	40	Gorilla . . . . .	361	"
	41	Orang . . . . .	324	"

TABLE IV.—*Orbital Indices.*

	No. of skull.	Race.	Index.	Class.
1	13	American Indian (deformed)	1091	Megaseme.
2	30	Negro from Madagascar	1000	"
3	17a	Australian	976	"
4	12	American Indian (deformed)	950	"
5	16	Peruvian (deformed)	950	"
6	17	Peruvian (deformed)	949	"
7	28	Negro	946	"
8	2	Hindoo	946	"
9	14	Peruvian	946	"
10	29	Ashantee	925	"
11	32	European	919	"
12	4	Lascar	914	"
13	5a	Chinese	914	"
14	6	Malay	897	"
15	3	Lascar	895	"
16	7	Malay	895	"
17	26	Negro	892	"
18	5	Chinese	892	"
19	21	Australian	878	Mesoseme.
20	15	Peruvian (deformed)	872	"
21	37	European ?	868	"
22	20	Australian	868	"
23	27	Negro	861	"
24	36	European ?	846	"
25	34	European ?	838	Microseme.
26	24	Negro	837	"
27	22	Australian	833	"
28	23	Negro	827	"
29	9	American Indian	820	"
30	11	American Indian	820	"
31	1	European	820	"
32	39	Negro ?	816	"
33	35	European	810	"
34	25	Negro	786	"
35	31	Hottentot	784	"
36	18	Australian	775	"
37	10	American Indian	767	"
38	19	Australian	683	"
40		Gorilla	1068	Megaseme.
41		Orang	1158	"



TABLE V.—*Cranial Capacities.*

	No. of skull.	Race.	Capacity.	Class.
1	36	European ? . . . .	1640 c.c.	Megacephalic.
2	21	Australian . . . . .	1575	"
3	10	American Indian . . . .	1560	"
4	16	Peruvian . . . . .	1530	"
5	24	Negro . . . . .	1525	"
6	9	American Indian . . . .	1510	"
7	4	Lascar . . . . .	1507	"
8	6	Malay . . . . .	1500	"
9	25	Negro . . . . .	1490	"
10	34	European ? . . . . .	1470	"
11	1	European . . . . .	1450	Mesocephalic.
12	7	Malay . . . . .	1450	"
13	37	European ? . . . . .	1425	"
14	3	Lascar . . . . .	1425	"
15	17 <sub>a</sub>	Australian . . . . .	1420	"
16	11	American Indian . . . .	1420	"
17	15	Peruvian . . . . .	1390	"
18	35	European . . . . .	1385	"
19	17	Peruvian . . . . .	1375	"
20	12	American Indian . . . .	1370	"
21	29	Ashantee . . . . .	1370	"
22	2	Hindoo . . . . .	1360	"
23	19	Australian . . . . .	1360	"
24	17	Peruvian . . . . .	1355	"
25	13	American Indian . . . .	1340	Microcephalic.
26	39	Negro ? . . . . .	1335	"
27	32	European . . . . .	1335	"
28	30	Madagascar . . . . .	1330	"
29	27	Negro . . . . .	1320	"
30	23	Negro . . . . .	1315	"
31	14	Peruvian . . . . .	1310	"
32	5 <sub>a</sub>	Chinese . . . . .	1275	"
33	5	Chinese . . . . .	1250	"
34	22	Australian . . . . .	1250	"
35	18	Australian . . . . .	1240	"
36	28	Negro . . . . .	1225	"
37	20	Australian . . . . .	1225	"
38	26	Negro . . . . .	1185	"
	40	Gorilla . . . . .	460	"
	41	Orang . . . . .	490	"

## REPORTS.



# MEDICAL REPORT.

1891.

By HECTOR W. G. MACKENZIE, M.A., M.D., F.R.C.P.,  
MEDICAL REGISTRAR.

TABLE I.—*General Statement of Medical and Surgical Patients.*

				Males.	Females.	Total.	
Number of patients in Hospital, Jan. 1st, 1891				...	200	...	348
" " " Dec. 31st, 1891				...	213	...	381
" " discharged or died during 1891:							
				Males	Females.	Total.	Rate per cent.
Cured	...	...	1672	...	1074	...	58·8
Relieved	...	...	535	...	549	...	23·2
Unrelieved or other causes	...	...	137	...	132	...	5·9
Died	...	...	357	...	211	...	12·1
				2701	1966	4667	
Average number of days of each medical patient's stay in hospital—24·6.							
" " surgical							29·1.

TABLE II.—*General Medical Statement.*

Number of Medical Beds <sup>1</sup> ...				...	...	...	171
Number of patients in Medical Wards, Jan. 1st, 1891				...	69	...	132
" " admitted during the year 1891				...	1021	...	1858
Total				...	1090	...	1990
" " in Medical Wards, Dec. 31st, 1891				...	62	...	124
" " treated to a termination during 1891				...	1028	...	1866
" " discharged or died during 1891:							
				Males.	Females.	Total.	Rate per cent.
Cured	...	...	443	...	331	...	41·47
Relieved	...	...	271	...	334	...	32·43
Unrelieved or other causes	...	...	64	...	37	...	5·41
Died	...	...	250	...	136	...	20·68
Total				...	1028	...	1866
Average number of days of each patient's stay in hospital—24·6.							

<sup>1</sup> This does not include 21 beds in Adelaide Ward, the statistics of which are given in the Report of the In-patient Department for Diseases of Women.



TABLE III.—*General*

DISEASE.	Number of cases.			Age.								Duration of residence.									
	Total.	M.	F.	Under 5	5-10	20	30	40	50	60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mths. 1-2	Mths. 2-4	Mths. 4-6	Mths. 6-9	Mths. 9-12	Above 1 year	
I. GENERAL DISEASES.																					
Rötheln . . . . .	4	...	4	...	...	...	3	1	...	...	...	1	3	...	...	...	...	...	...	...	
Measles . . . . .	4	1	3	2	2	...	...	...	...	...	...	1	2	1	...	...	...	...	...	...	
Influenza . . . . .	68	46	22	3	6	9	17	17	10	4	2	23	24	17	4	...	...	...	...	...	
Scarlet fever . . . . .	21	11	10	13	4	4	...	...	...	...	...	4	...	3	10	4	...	...	...	...	
Enteric fever . . . . .	42	28	14	2	2	17	12	4	5	...	...	4	3	5	21	9	...	...	...	...	
Erysipelas . . . . .	30	15	15	1	4	6	4	6	6	3	...	5	15	7	3	...	...	...	...	...	
Mumps . . . . .	1	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	
Diphtheria . . . . .	88	42	46	44	30	6	6	2	...	...	...	33	22	23	5	5	...	...	...	...	
Diphtheritic paralysis . . . . .	5	5	...	...	...	1	3	1	...	...	...	...	...	2	2	1	...	...	...	...	
Febricula . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Fever, ? cause . . . . .	4	4	...	2	...	2	...	...	...	...	...	2	1	1	...	...	...	...	...	...	
Pertussis . . . . .	7	3	4	7	...	...	...	...	...	...	...	3	1	2	...	1	...	...	...	...	
Ague . . . . .	3	2	1	...	...	2	...	1	...	...	...	1	1	...	1	...	...	...	...	...	
Syphilis . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Hydrophobia . . . . .	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	
Pyæmia . . . . .	2	1	1	...	...	1	1	...	...	...	...	1	...	1	...	...	...	...	...	...	

Table of Diseases.

Cured.		Re- lieved.		Unre- lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	4	...	...	...	...	...	...	The cases of rōtheln were all in nurses.
1	3	...	...	...	...	...	...	
40	19	...	...	...	...	6	3	31 cases were complicated with pneumonia, of which 9 proved fatal; 7 with lobar, 2 with broncho-pneumonia. In 6 cases there was bronchitis, in 1 morbus cordis, in 1 granular kidneys. With one exception all the cases were admitted between April 22 and June 29. 2 ward-maids and 2 nurses among those affected.
7	9	1	...	2	...	1	1	15 originated in the hospital, the patients having been admitted for some other complaint. 4 were cases of burns or scald. Of the fatal cases, there was no P.M. in 1; pulmonary collapse in 1.
22	9	...	...	...	...	6	5	In 6 cases relapses occurred, in 3 of which there was a second relapse. Of the fatal cases, there was no P.M. in 3, in one of which there was probably perforation. Perforation was found P.M. in 5. Hæmorrhage occurred in 5, tympanites in 1, hyperpyrexia in 1. Diarrhœa prevailed more commonly than has been usual of late years; in only 12 was there constipation throughout. Spots were observed in 31 cases; they were abundant in 12 cases, of which 1 was fatal; few or moderate in number in 19, of which 5 were fatal; absent in 11 cases, of which 5 were fatal. Influenza occurred during convalescence in 1, thrombosis in 2, periostitis in 1.
14	13	...	...	...	...	1	2	All but 2 facial erysipelas. Albuminuria occurred in 8, 3 of which were fatal. No P.M. in 1. Chronic interstitial nephritis in 1, hypostatic congestion of the lungs in 1.
...	1	...	...	...	...	...	...	The patient was a nurse in the hospital.
20	24	...	1	1	...	21	21	8 cases included were doubtful. Intubation alone was performed in 11 cases, with 9 deaths; tracheotomy alone in 29 cases, with 20 deaths; intubation followed by tracheotomy in 3, with 2 deaths. Albuminuria was noted in 13 of the non-fatal and in 18 of the fatal cases. Paralytic symptoms were noted in 10 of the non-fatal and in 7 of the fatal cases. Hyperpyrexia (temp. 109° F.) occurred in 1 case, a child of 2. Noma occurred in 1, and the patient was transferred to the surgical side, where he died.
5	...	...	...	...	...	...	...	Paralysis of diaphragm in 1, albuminuria in 1. No history of diphtheria in 1.
...	1	...	...	...	...	...	...	
2	...	...	1	...	...	1	...	1 suspected typhus, sent to fever hospital; 1 (?) pneumonia. In the fatal case, an infant of 10 weeks, the P.M. was negative.
1	...	1	4	1	...	...	...	Bronchitis in 3, broncho-pneumonia in 1.
2	...	...	1	...	...	...	...	1 a doubtful case.
...	...	1	...	...	...	...	...	Perichondritis of costal cartilages, &c.
...	...	...	...	...	...	1	...	Patient a heavy drinker. Symptoms those of hydrophobia. P.M. negative.
...	...	...	...	...	...	1	1	1 secondary to acute periostitis; 1 chronic case, miscarriage 3 months before death, endometritis, abscesses spleen and lungs, vegetations on mitral valve.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.									
	Total.	M.	F.	Under 5	5-10	-20	-30	-40	-50	-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Above 1 year	
I. GENERAL DISEASES — <i>con- tinued.</i>																					
Acute rheumatism . . . . .	74	43	31	...	6	23	25	16	3	1	...	4	26	33	8	3	...	...	...	...	...
Chronic articular rheuma- tism . . . . .	6	1	5	...	...	...	2	2	1	...	1	1	...	3	2	...	...	...	...	...	...
Gonorrhœal rheumatism . . . . .	2	1	1	...	...	1	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Gout . . . . .	6	5	1	...	...	...	1	2	...	2	1	...	...	2	3	1	...	...	...	...	...
Rickets . . . . .	3	1	2	3	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...
Myxœdema . . . . .	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Diabetes mellitus . . . . .	11	7	4	...	...	1	2	3	2	2	1	2	1	3	3	2	...	...	...	...	...
Purpura . . . . .	4	3	1	1	...	1	...	2	...	...	...	2	...	2	...	...	...	...	...	...	...
Hæmophilia . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Scurvy . . . . .	1	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Anæmia . . . . .	27	12	6	1	1	16	8	1	...	...	...	2	11	10	4	...	...	...	...	...	...
Pernicious anæmia . . . . .	2	1	1	...	...	...	...	1	...	1	...	1	...	...	1	...	...	...	...	...	...
Leucocythæmia . . . . .	2	2	...	...	...	...	...	1	...	...	1	1	...	1	...	...	...	...	...	...	...
Lymphadenoma . . . . .	6	5	1	...	1	1	...	1	1	2	...	2	2	1	1	...	...	...	...	...	...
General tuberculosis . . . . .	3	2	1	2	...	...	...	...	1	...	...	2	...	1	...	...	...	...	...	...	...
Disseminated malignant disease . . . . .	1	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
II. DISEASES OF THE SKIN.																					
Erythema . . . . .	1	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Erythema nodosum . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Erythema bullosum . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Psoriasis . . . . .	2	1	1	...	...	1	...	...	1	...	1	...	...	1	1	...	...	...	...	...	...
Eczema . . . . .	6	3	3	1	...	2	1	1	...	1	...	...	...	2	...	4	...	...	...	...	...
Scleroderma . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...

*continued.*

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
43	31	...	...	...	...	...	...	39 were cases of first attack, of which there were 23 males and 16 females. Of the cases of first attack, in 13 there was evidence of mitral disease, in 1 of both mitral and aortic disease, in 2 of pericarditis, in 1 of pleurisy, and in 1 of rheumatic nodules. Of the cases of second or later attack, in 11 there was mitral, in 2 aortic, in 1 both mitral and aortic disease, and in 2 pericarditis.
...	...	1	5	...	...	...	...	
...	...	1	1	...	...	...	...	Pelvic peritonitis followed in female, and the patient was transferred to Adelaide.
5	1	...	...	...	...	...	...	Trace of albumen in 3. Aortic obstruction in 1. Dementia during acute attack in 1.
...	...	...	1	...	...	1	1	Diarrhœa and vomiting in 1 fatal case; pulmonary collapse in the other.
...	...	...	1	...	...	...	...	
...	...	3	3	...	1	4	...	Carbuncles in 1, boils in 1, albuminuria in 3, dementia in 1, retinitis in 1. Knee-jerks noted as present in 7. Of the fatal cases: diphtheria in 1, vegetations on mitral valve and tubular nephritis in 1.
1	1	...	...	...	...	2	...	Of the fatal cases: pneumonia and endocarditis in 1, rickets in 1.
...	...	...	1	...	...	...	...	Menorrhagia the principal symptom in this case.
...	...	...	...	...	...	...	1	History of privation for 3 months. Death from cerebral hæmorrhage (see Special Abstracts).
...	...	1	25	...	...	...	1	Anasarca in 7, spleen enlarged in 1, rheumatic pains in 1, dyspepsia in 7. In fatal case suspicion of poisoning.
...	...	...	...	...	...	1	1	
...	...	...	...	1	...	1	...	The patient, who left unrelieved, died the day after leaving. The same patient was in the hospital during the greater part of 1890. A full account of the case is published in the 'Clin. Soc. Trans.,' 1891. In the fatal case enlargement of lymphatic glands generally and of spleen and liver (see Special Abstracts).
...	...	1	...	1	...	3	1	Pleuritic effusion in 2. Cerebral hæmorrhage in 1 of the fatal cases, a boy aged 9.
...	...	...	...	...	...	2	1	Alcoholic history and advanced cirrhosis of liver in adult fatal case.
...	...	...	...	...	...	1	...	Prævertebral and mediastinal glands, liver, pancreas, &c., sarcomatous.
1	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
1	1	...	...	...	...	...	...	
1	1	1	2	...	...	1	...	1 of face, 1 of legs, 4 general. Fatal case an infant; acute eczema and broncho-pneumonia.
...	...	...	1	...	...	...	...	Small patch on back.



TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.									
	Total.	M.	F.	Under 5	5-10	-20	-30	-40	-50	-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Above 1 year	
II. DISEASES OF THE SKIN— <i>continued.</i>																					
Urticaria . . . . .	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	
Herpes frontalis . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	
Impetigo . . . . .	2	2	...	...	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...	
Lupus . . . . .	10	3	7	...	1	4	1	2	1	...	1	1	...	5	3	1	...	...	...	...	
 Malignant disease of skin . . . . .	1	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
III. DISEASES OF THE RESPI- RATORY SYSTEM.																					
Laryngitis . . . . .	3	3	...	...	1	1	...	...	...	...	1	1	1	...	...	...	...	...	...	...	
Tubercular laryngitis . . . . .	5	4	1	...	...	...	...	3	1	1	...	2	...	1	1	1	...	...	...	...	
 Syphilis of larynx . . . . .	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Papillomata of larynx . . . . .	1	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	
Malignant disease of larynx . . . . .	2	2	...	...	...	...	...	...	1	1	...	1	...	1	...	...	...	...	...	...	
Stenosis of larynx . . . . .	2	1	1	1	...	...	...	...	1	...	...	...	...	...	...	1	1	...	...	...	
Paralysis of abductors . . . . .	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Croup . . . . .	5	5	...	5	...	...	...	...	...	...	...	3	2	...	...	...	...	...	...	...	
Acute bronchitis . . . . .	50	32	18	20	5	3	5	5	3	7	2	12	22	14	2	...	...	...	...	...	
 Chronic bronchitis . . . . .	31	17	14	...	1	1	1	5	6	8	9	3	8	13	5	1	1	...	...	...	
 Emphysema . . . . .	3	2	1	...	...	...	...	...	1	2	...	1	...	1	1	...	...	...	...	...	
Broncho-pneumonia . . . . .	49	25	24	42	6	1	...	...	...	...	...	12	16	15	5	1	...	...	...	...	
 Acute pneumonia . . . . .	102	85	17	6	7	15	29	21	12	8	4	26	26	38	10	2	...	...	...	...	

*continued.*

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
1	...	...	...	...	...	...	...	After influenza.
1	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	
...	...	3	6	...	1	...	...	In 9 cases the face affected, in 1 the hand. 8 cases treated by Koch's method with temporary benefit. 1 case developed erysipelas and 1 measles while under treatment.
...	...	...	...	...	...	1	...	Skin over thorax very extensively affected with sarcoma. Phthisis of both lungs and pleurisy.
3	...	...	...	...	...	...	...	In 3 the lungs extensively diseased. 2 cases treated by Koch's method, of which 1 proved fatal, and the other derived no benefit. Tracheotomy performed. The case complicated by goitre. Removed by intra-laryngeal method.
...	...	3	...	1	...	...	1	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	...	Tracheotomy performed in both. Perichondritis in 1. Tracheotomy.
...	...	...	...	2	...	...	...	
...	...	1	1	...	...	...	...	
...	...	...	...	1	...	...	...	Suspected diphtheria in 2 cases.
5	...	...	...	...	...	...	...	3 after influenza. Mitral disease in 1, albuminuria in 3, emphysema in 1, cretinism in 1. Of the fatal cases, 5 infants; fibroid phthisis in the adult case, a man aged 60.
25	15	2	1	...	1	5	1	
...	...	16	11	...	...	1	3	
...	...	...	...	...	...	2	1	Hypertrophy and dilatation of right side of heart in all the fatal cases, emphysema in 3, broncho-pneumonia in 2, chronic congestion of organs in 3, cyanosis with tricuspid incompetence in 1. Of the non-fatal cases: mitral incompetence in 2, mitral and aortic valvular disease in 2, albuminuria in 3, emphysema in 3.
11	19	2	...	1	...	11	5	Chronic congestion of organs, with dilatation and hypertrophy of the right side of the heart, in all. Glycosuria in 1.
...	...	...	...	...	...	...	...	2 after measles, 1 after influenza. The fatal cases all infants or young children. No P.M. in 6. Tubular nephritis in 1, superficial ulceration of intestines in 1.
61	14	1	...	1	...	22	3	An unusual excess of males over females, the proportion, as deduced from the experience of the preceding eleven years, being 13:4. The situation of the disease was in the right lung in 61, in the left in 31, in both in 9, indeterminate in 1. Of the cases on the right side: in 12 the apex, in 1 the middle, in 45 the base, and in 3 the whole of the lung was affected. Of those on the left: in 5 the apex, in 2 the middle, in 23 the base, and in 1 the whole of the lung affected. Of the fatal cases: contracted granular kidneys in 3, aortic valvular disease in 1, cirrhosis of liver in 1, pericarditis in 3, acute pleurisy in 1, great enlargement of liver in 1. History of alcoholism in 9, of which 4 proved fatal. History of injury in 3. 7 cases admitted moribund.

TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence.									
	Total.	M.	F.	Under 5	5-10	20	30	40	50	60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Above 1 year
III. DISEASES OF THE RESPIRATORY SYSTEM — <i>continued.</i>																				
Phthisis . . . . .	79	44	35	...	2	16	15	20	17	8	1	22	16	20	14	7	...	...	...	...
 Hæmoptysis . . . . .	10	5	5	...	...	1	6	2	1	...	...	1	7	2	...	...	...	...	...	...
Bronchiectasis . . . . .	2	2	...	...	...	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...
Pneumothorax . . . . .	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Pleurisy . . . . .	47	38	9	1	2	8	11	6	15	1	3	8	11	16	9	3	...	...	...	...
 Empyema . . . . .	28	20	8	7	4	4	4	2	5	2	...	1	1	4	9	12	1	...	...	...
 Asthma . . . . .	3	2	1	...	...	...	2	...	1	...	...	...	1	1	1	...	...	...	...	...
Malignant disease of lung	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Do. of mediastinum . . . . .	4	2	2	...	...	...	1	...	2	...	1	...	1	1	2	...	...	...	...	...
IV. DISEASES OF THE ORGANS OF CIRCULATION.																				
Pericarditis . . . . .	8	3	5	1	1	4	2	...	...	...	...	1	...	3	3	1	...	...	...	...
 Adherent pericardium . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Valvular disease of the heart—(a) Mitral:																				
i. Stenosis . . . . .	19	3	16	...	1	3	4	6	2	1	2	5	3	6	3	1	1	...	...	...

*continued.*

Cured.		Re- lieved.		Unre- lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	26	27	3	1	15	7	History of alcoholism in 7 male cases, 4 of which were fatal. Transposition of viscera in 1. Of the fatal cases: no P.M. in 2; in all both lungs affected; in 8 cases the right lung the more advanced, in 6 the left, and in the remainder the disease equal on the two sides; the larynx affected in 3, the trachea in 1; ulceration of intestines in 6, in 1 of which acute perforative peritonitis had occurred; pneumothorax in 1, fatty liver in 4, cirrhosis of liver in 2, chronic interstitial nephritis in 2, aortic and mitral valvular disease in 1, perihepatitis in 1, chronic peritonitis in 1, acute miliary tuberculosis in 1, old calcified empyema in 1. 6 cases admitted moribund. 4 cases treated with tuberculin or its derivatives with doubtful benefit.
5	4	...	1	...	...	...	...	Signs of phthisis in 5, mitral stenosis in 1. In 1 case abortion occurred.
...	...	1	...	...	...	1	...	Phthisis and plumbism in non-fatal case. Chronic pneumonia and pleuritic effusion in fatal case.
...	...	1	...	...	...	...	...	Case of phthisis.
27	7	10	1	1	...	...	1	The fatal case tubercular. 21 on the right side, 26 on the left. In 1 case scarlatina developed, and the pleuritic effusion becoming purulent, resection of rib was performed. Aspiration performed in 16 cases once, and in 1 case twice. Dry tapping in 1 case.
11	7	2	1	1	...	6	...	13 on the right side, 15 on the left. Resection of rib performed in 26 out of the 28 cases, of which 5 proved fatal. 1 case with a chronic discharging sinus was transferred to the surgical side. Of the fatal cases: broncho-pneumonia in 2, pericarditis in 2, cerebral abscess on the same side as the empyema in 1.
...	...	2	1	...	...	...	...	Growth infiltrating root of left lung; pneumonia and pericarditis also.
...	...	...	...	...	...	2	2	Right empyema in 1, for which resection of rib was performed; œsophagus and pericardium invaded in 1; blocking of superior vena cava in 1; cirrhosis of liver in 1.
1	4	...	...	...	...	2	1	History of rheumatism in 4, dry pleurisy in 1, mitral valvular disease in 2, aortic in 1. Of the fatal cases: 1, a child age 3, admitted moribund; tubercular pleurisy and phthisis in 1.
...	...	1	...	...	...	...	...	Anasarca and chronic congestion of liver in this case.
...	...	1	11	...	...	2	5	Rheumatic history in 11; no history of rheumatism in 8, but in 2 of the latter a history of chorea. Of the fatal cases: in 4 the stenosis extreme, in 1 adherent pericardium, in 1 pneumonia, in 2 bronchitis, in 1 pleurisy, in 1 pulmonary apoplexy, in 1 (a woman aged 60) patent foramen ovale (see 'Path. Soc. Trans.,' 1891), in 1 old hydatid of liver. No P.M. in 1.



TABLE III—

DISEASE.	Number of cases.		Age.									Duration of residence.									
	Total.	M.	F.	Under 5	5-10	-20	-30	-40	-50	-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Above 1 year	
IV. DISEASES OF THE ORGANS OF CIRCULATION— <i>continued.</i>																					
ii. Incompetence . . .	16	8	8	...	1	6	4	1	1	3	...	...	2	8	4	1	1	...	...	...	...
iii. Stenosis and incompetence	14	6	8	...	1	5	5	1	1	...	1	1	2	4	5	2	...	...	...	...	...
(b) Aortic . . .	15	12	3	...	...	3	2	3	3	1	3	3	2	4	4	1	1	...	...	...	...
(c) Mitral and aortic	30	19	11	...	2	5	7	7	7	1	1	8	5	11	2	4	...	...	...	...	...
(d) Ulcerative endocarditis	1	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Congenital heart disease .	2	1	1	1	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
Palpitation . . .	3	...	3	...	...	...	...	1	...	2	...	...	...	3	...	...	...	...	...	...	...
Dilated heart . . .	3	2	1	...	...	...	...	1	...	1	1	1	1	1	...	...	...	...	...	...	...
Thoracic aneurysm . .	11	9	2	...	...	...	...	1	5	4	1	...	1	5	2	2	1	...	...	...	...
Thrombosis . . .	2	2	...	...	...	...	...	1	...	1	...	...	1	1	...	...	...	...	...	...	...
Raynaud's disease . .	3	1	2	...	...	...	2	...	...	1	...	...	1	1	1	...	...	...	...	...	...
V. DISEASES OF THE DUCTLESS GLANDS.																					
Exophthalmic goitre . .	2	...	2	...	...	...	2	...	...	...	...	...	...	1	1	...	...	...	...	...	...
Goitre . . .	3	1	2	...	...	...	1	2	...	...	...	2	1	...	...	...	...	...	...	...	...
Enlargement of spleen .	2	1	1	...	...	1	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...
Addison's disease . .	2	1	1	...	...	...	...	1	1	...	...	1	...	1	...	...	...	...	...	...	...
VI. DISEASES OF THE DIGESTIVE ORGANS.																					
1. <i>Alimentary canal.</i>																					
Pharyngitis . . .	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...
Retro-pharyngeal abscess .	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Tonsillitis . . .	32	13	19	2	3	11	12	1	1	2	...	15	8	8	1	...	...	...	...	...	...

*continued.*

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	8	8	...	...	...	...	Rheumatic history in 12; no history of rheumatism in 4. Bronchitis in 4, ascites in 2, phthisis in 1, pleuritic effusion in 1.
...	...	4	7	...	...	2	1	Rheumatic history in 10; no history of rheumatism in 3; not noted in 1. Of the fatal cases: no P.M. in 1, adherent pericardium and pneumonia in 1, emphysema in 1.
...	...	10	2	1	...	1	1	Rheumatic history in 7. Suspicion of aneurysm in 2, adherent pericardium in 1, Raynaud's disease in 1, dementia in 1. Of the fatal cases: no P.M. in 1, obesity in 1.
...	...	8	6	2	1	9	4	Rheumatic history in 24; no history of rheumatism in 2; others doubtful. Mitral stenosis in 6, 4 of which were fatal cases. Adherent pericardium in 4, pericarditis in 2, extreme atheroma of aorta in 1, angina pectoris in 1, peritonitis in 1, meningitis in 1, pneumonia in 1.
...	...	...	...	...	...	...	1	Infarcts in spleen and kidneys; embolism of left middle cerebral artery (see Special Abstracts).
...	...	1	...	...	...	1	...	In fatal case (an infant of 9 weeks) patent ductus arteriosus, aorta arising from both ventricles, impervious pulmonary orifice.
...	...	3	...	...	...	...	...	
...	...	...	...	...	...	2	1	History of alcoholism in 1, and of rheumatism in 1; heart fatty in 2.
...	...	5	2	...	...	4	...	History of alcoholism in 2, of syphilis in 1, of rheumatism in 2. The ascending part of the arch affected in 6, the transverse part of the arch in 4, the descending part in 1. Of the fatal cases: erosion of vertebræ in 1, tubercle of lung in 1, adherent pericardium and cirrhosis of liver in 1.
2	...	...	...	...	...	...	...	Both of the right femoral vein.
...	1	1	1	...	...	...	...	History of alcoholism in 1; rheumatoid arthritis in 1.
...	...	2	...	...	...	...	...	Bronzing of skin in 1; general œdema in 1.
...	...	1	1	1	...	...	...	1 case transferred to surgical side.
...	...	1	1	...	...	...	...	
...	...	1	...	...	...	1	...	In fatal case tubercle of lungs; supra-renals caseous (see Special Abstracts).
1	...	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	Tracheotomy performed on account of dyspnœa. No P.M.
13	19	...	...	...	...	...	...	1 house surgeon, 1 nurse. Chronic enlargement of tonsils in 4, erythema nodosum in 1, suppuration in 2.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5-10	10-20	20-30	30-40	40-50	50-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mths. 1-2	Mths. 2-4	Mths. 4-6	Mths. 6-9	Mths. 9-12	Above 1 year
VI. DISEASES OF THE DIGESTIVE ORGANS— <i>continued.</i>																				
Stricture of œsophagus . . . . .	7	7	...	...	...	...	...	1	...	1	5	1	2	1	2	1	...	...	...	...
Dyspepsia . . . . .	27	6	21	...	1	3	9	10	2	...	2	6	11	7	2	1	...	...	...	...
Gastric ulcer . . . . .	38	5	33	...	...	1	23	6	3	4	1	4	6	8	17	3	...	...	...	...
Vomiting . . . . .	19	5	14	1	...	7	4	2	2	3	...	6	3	6	3	1	...	...	...	...
Hæmatemesis . . . . .	7	5	2	...	...	...	...	4	3	...	...	...	5	1	1	...	...	...	...	...
Malignant disease of stomach	12	9	3	...	...	...	...	1	5	3	3	3	...	3	3	3	...	...	...	...
Diarrhœa . . . . .	50	26	24	28	1	5	6	3	5	2	...	26	12	8	4	...	...	...	...	...
Enteritis . . . . .	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Dysentery . . . . .	1	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Colic . . . . .	18	13	5	2	3	3	3	4	2	1	...	10	6	2	...	...	...	...	...	...
Constipation . . . . .	24	5	19	2	2	7	5	3	2	1	2	12	5	5	1	1	...	...	...	...
Intussusception . . . . .	3	1	2	3	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...
Internal strangulation . . . . .	2	...	2	...	1	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...
Malignant disease of intestines	10	6	4	...	...	...	1	1	4	4	...	6	...	2	...	2	...	...	...	...
Obstruction (other forms)	3	1	2	1	...	...	...	...	1	...	1	3	...	...	...	...	...	...	...	...
Perityphlitis . . . . .	24	20	4	...	2	10	12	...	...	...	...	1	5	12	3	3	...	...	...	...
Perforation of vermiform appendix	2	1	1	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...	...

*continued.*

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M	F.	M.	F.	M.	F.	M.	F.	
...	...	1	...	2	...	4	...	All cases of malignant disease. Of the fatal cases: in 1 gastrostomy performed 2 days before death; in 1 communication between trachea and œsophagus, in which case tracheotomy was performed; in 1 acute pneumonia supervened. Of the cases unrelieved: 1 was transferred to the surgical side, where gastrostomy was subsequently performed, but the patient died 14 days later. Dementia in 1 case.
...	...	6	21	...	...	...	...	
...	...	2	29	...	1	3	3	Of the fatal cases: hæmorrhage in 2, perforation with peritonitis in 4; in one of the latter there had been no previous symptoms. Of the non-fatal cases: hæmatemesis in 22.
3	8	1	6	1	...	...	...	4 probably hysterical. Pregnancy in 1, dilated stomach in 1, round worms in 1.
5	1	...	...	...	...	...	1	All the males alcoholic. No P.M. in the fatal case.
...	...	1	1	3	1	5	1	Of the fatal cases: in 2 the cardiac end affected, in 3 the pylorus, and in 1 both surfaces and the greater curvature; acute peritonitis in 1, pneumonia in 1, chronic interstitial nephritis in 1. Of the non-fatal cases: pylorus affected in 2.
12	15	5	2	...	1	9	6	The fatal cases: all infants, and all occurred in the summer and autumn; rickets in 1, broncho-pneumonia in 1. Of the non-fatal cases, 4 were chronic.
1	...	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	A chronic case. The patient had worked in sewers for 9 years. Erythema nodosum in 1 case.
13	5	...	...	...	...	...	...	4 chronic cases. Mitral incompetence in 1.
4	16	1	2	...	1	...	...	All treated by inflation. In fatal case intussusception, which was of small into large intestine, not wholly reducible by moderate pressure.
...	2	...	...	...	...	1	...	Part involved in both cases the ileum. Peritonitis and hæmato-salpinx in 1 case.
...	...	...	...	...	...	2	...	
...	...	1	...	2	2	3	2	Of the non-fatal cases: 4 transferred to surgical side for operation. Colotomy performed in 2 cases, excision of cæcum in 1. In all large intestine the seat of disease; cæcum affected in 1, ascending colon in 1, transverse colon in 1, in which case there was a communication with the stomach, descending colon in 1, in which case peritonitis due to perforation of the cæcum occurred, sigmoid flexure in 3, rectum in 2, and 1 case was indeterminate. In 1 case there were secondary growths in the liver, mediastinum, &c.
...	...	...	...	1	1	1	1	The non-fatal case transferred to surgical side for operation. In one of the fatal cases abdominal section and resection of intestine performed. Ulceration of colon in 1 case producing stricture.
19	4	1	...	...	...	...	...	2 cases treated by incision. In 9 cases first attack.
...	...	...	...	...	...	1	1	Abdominal section in 1 case; death the same day. General peritonitis in both.



TABLE III—

DISEASE.	Number of cases.			Age.							Duration of residence.									
	Total.	M.	F.	Under 5	5-10	20	30	40	50	60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mths. 1-2	Mths. 2-4	Mths. 4-6	Mths. 6-9	Mths. 9-12	Above 1 year
<b>VI. DISEASES OF THE DIGESTIVE ORGANS—continued.</b>																				
Tubercular ulceration of intestines	2	1	1	...	...	...	...	2	...	...	...	1	1	...	...	...	...	...	...	...
Intestinal hæmorrhage	2	...	2	2	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
Tapeworms	1	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
<b>2. Peritoneum.</b>																				
Acute peritonitis	1	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Chronic peritonitis	1	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Tubercular peritonitis	15	11	4	2	6	5	...	1	1	...	...	2	3	4	4	2	...	...	...	...
Pelvic peritonitis	3	...	3	...	...	2	1	...	...	...	...	...	...	3	...	...	...	...	...	...
Hydatid tumour	2	1	1	1	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...
<b>3. Liver.</b>																				
Cirrhosis	31	18	13	...	...	...	...	9	13	7	2	4	5	11	6	5	...	...	...	...
Gall-stones	10	1	9	...	...	...	1	5	2	2	...	1	1	2	6	...	...	...	...	...
Obstructive jaundice	12	8	4	1	...	2	...	2	2	3	2	...	4	7	...	1	...	...	...	...
Malignant disease	4	2	2	...	...	...	1	...	1	2	...	1	...	2	...	1	...	...	...	...
Enlargement	4	2	2	...	...	...	...	...	3	1	...	...	1	2	...	1	...	...	...	...
Abscess	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
<b>4. Various.</b>																				
Abdominal tumour	16	7	9	...	...	...	3	4	2	7	...	4	2	4	6	...	...	...	...	...
Ascites	6	2	4	...	...	1	...	1	2	2	...	1	3	1	1	...	...	...	...	...

*continued.*

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	...	...	...	...	1	1	Perforation and purulent peritonitis in 1; phthisis of the lungs in both, advanced in 1.
...	1	...	...	...	...	...	1	In fatal case entire intestine contained blood, source doubtful.
...	...	...	1	...	...	...	...	
...	...	...	...	...	...	...	1	Cause doubtful. No P.M.
...	1	...	...	...	...	...	...	Right pleurisy also.
...	...	7	3	1	...	3	1	Fæcal abscess in 1, cirrhosis of liver in 1, ulceration of intestines and perforation in 1, lupus of face in 1, thrombosis of femoral in 1.
...	1	...	2	...	...	...	...	2 transferred to Adelaide Ward.
1	1	...	...	...	...	...	...	In both cases abdominal section and removal of the cyst was performed (see Special Abstracts).
...	...	8	8	1	...	9	5	Ascites in 26; paracentesis performed in 18. Of the fatal cases: no P.M. in 2, liver reduced in size in 9, of normal size in 2, enlarged in 1; spleen enlarged in 5; contracted granular kidneys in 1; acute nephritis in 1; pericarditis in 1, mitral valvular disease in 2, aortic in 1; fibroid phthisis in 1, obsolete pulmonary tubercle in 1, pleuritic effusion in 2; varicose œsophageal veins in 1.
...	1	...	8	1	...	...	...	Colic in 10, jaundice in 4. In some of the cases the diagnosis doubtful. In 1 case gall-stones found in the evacuations.
3	1	3	3	...	...	2	...	4 probably catarrhal. Mitral stenosis in 1. Of the fatal cases: calculus found in the pancreatic duct in 1; malignant disease of the head of the pancreas and cirrhosis in 1. In 4 enlargement of the liver.
...	...	1	1	...	1	1	...	In the fatal case liver enormous; primary malignant disease of the stomach.
...	...	2	2	...	...	...	...	Ascites and jaundice in 1.
1	...	...	...	...	...	...	...	Treated by incision and drainage. History of dysentery.
...	1	4	3	1	3	2	2	Abdominal section performed in 2 of the fatal cases. Obstruction of the bowels in 1. Of the fatal cases: no P.M. in 1, malignant disease of omentum in 2, of the retro-peritoneal glands in 1. Ascites in 3 cases. Of the non-fatal cases: 6 probably malignant, 1 a phantom. In 1 case the tumour was supposed to be a large hydatid cyst of liver; the patient refused treatment, and subsequently went to another hospital where he died, and the tumour was found to be a growth of the supra-renal capsule (see Special Abstracts).
1	...	...	4	1	...	...	...	In 3 probably cirrhosis of the liver, in 1 chronic bronchitis, in 1 phthisis.

TABLE III—

DISEASE.	Number of cases.		Age.								Duration of residence.									
	Total.	M.	F.	Under 5	5-10	10-20	20-30	30-40	40-50	50-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Above 1 year
<b>VII. DISEASES OF THE GENITO-URINARY SYSTEM.</b>																				
Acute nephritis . . . . .	22	15	7	1	2	7	3	6	3	...	...	4	1	5	7	5	...	...	...	...
Chronic nephritis . . . . .	46	28	18	...	2	2	12	9	5	11	5	8	5	10	15	8	...	...	...	...
Renal calculus . . . . .	2	1	1	...	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...
Renal colic . . . . .	5	...	5	...	...	1	1	3	...	...	...	...	2	2	1	...	...	...	...	...
Pyelitis . . . . .	2	...	2	1	...	...	...	...	1	...	...	...	...	1	...	1	...	...	...	...
Hæmaturia . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Paroxysm. hæmoglobinuria	2	1	1	...	...	1	1	...	...	...	...	...	2	...	...	...	...	...	...	...
Tubercul. disease of kidney	1	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Hydronephrosis . . . . .	2	...	2	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...	...
Malignant disease of kidney	2	1	1	1	...	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...
Enlargement of kidney . . .	1	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Polyuria . . . . .	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Glycosuria . . . . .	3	...	3	...	...	...	...	1	...	1	1	...	2	...	1	...	...	...	...	...
Retention of urine . . . . .	2	2	...	...	...	...	...	...	...	1	1	1	1	...	...	...	...	...	...	...
<b>VIII. DISEASES OF THE NERVOUS SYSTEM.</b>																				
Acute meningitis . . . . .	7	6	1	4	...	2	1	...	...	...	...	3	2	1	1	...	...	...	...	...
Tubercular meningitis . . .	14	7	7	5	4	2	2	1	...	...	...	2	6	5	1	...	...	...	...	...
Chronic meningitis . . . . .	1	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Hemiplegia . . . . .	16	10	6	...	...	1	3	4	4	1	3	1	4	3	6	2	...	...	...	...
Cerebral hæmorrhage . . . .	7	6	1	...	...	1	...	1	3	2	6	...	1	...	...	...	...	...	...	...

continued.

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
2	...	11	6	...	...	2	1	1 after scarlatina, 1 after parturition. History of alcoholism in 2. Mitral disease in 2, of which 1 was fatal. 1 case contracted measles while under treatment. Of the fatal cases: no P.M. in 2; acute tubular nephritis, with double pleurisy and early pericarditis in 1.
...	...	15	11	1	...	12	7	History of alcoholism in 8, of gout in 8, of plumbism in 2, of scarlatina in 2. Dyspnœa a marked symptom in 7, of which 3 were fatal. Albuminuric retinitis in 3; movable kidney in 1. Of the fatal cases: no P.M. in 2; kidneys "contracted granular" in 10, "large and pale" in 8, "large and mottled" in 2; urate of soda in great toe-joints in 3; pneumonia in 1, pleuritic effusion in 4, pulmonary apoplexy in 1; pericarditis in 2, mitral incompetence in 3, aortic valvular disease in 1; infarcts in spleen in 1, intestinal hæmorrhage in 1, gall-stones in 1, cirrhosis of the liver in 2, acute peritonitis in 1, hemiplegia in 1, convulsions in 1.
...	...	...	...	1	1	...	...	Both transferred for operation to the surgical side. Pyonephrosis in 1.
...	1	...	4	...	...	...	...	
...	...	...	2	...	...	...	...	
...	...	1	...	...	...	...	...	Malignant disease of prostate in this case.
...	...	1	1	...	...	...	...	
...	...	...	1	...	...	...	...	Right kidney affected. Phthisis pulmonalis also.
...	...	...	2	...	...	...	...	
...	...	...	...	...	...	1	1	In both the left kidney affected by sarcoma, giving rise to an enormous tumour. Secondary growths in liver in adult case.
...	...	...	...	...	...	...	1	
...	...	...	1	...	...	...	...	
...	1	...	2	...	...	...	...	
...	...	1	...	...	...	1	...	Enlarged prostate in both. In the fatal case death occurred suddenly a few hours after admission; the bladder was distended, and there was thrombosis of the left femoral and iliac veins.
1	...	...	...	1	...	4	1	In 2 cases death ensued very shortly after admission. In the case of recovery eye excised for pseudo-glioma. In 2 cases discharge from ear. Illness attributed to being snowballed in 1 case.
...	...	...	1	...	...	7	6	No P.M. in 2; head only examined in 1; general tuberculosis in 4; old phthisis and caries of hip in 1.
...	...	...	...	...	...	...	1	
...	3	10	3	...	...	...	...	10 on the right side, in 7 of which there was aphasia; 6 on the left. Mitral disease in 2, albuminuria in 3. History of syphilis in 3, of alcoholism in 3.
...	...	...	...	...	...	6	1	Right hemisphere the seat of the hæmorrhage in 4, left hemisphere in 2, pons in 1; contracted granular kidneys in 3, cirrhosis of liver in 1, mitral incompetence in 1.



TABLE III.—

DISEASES.	Number of cases.			Age.							Duration of residence.									
	Total.	M.	F.	Under 5	5-10	-20	-30	-40	-50	-60	Above 60	Under 1 week	Wks. 1-2	Wks. 2-4	Mths. 1-2	Mths. 2-4	Mths. 4-6	Mths. 6-9	Mths. 9-12	Above 1 year
VIII. DISEASES OF THE NERVOUS SYSTEM — <i>continued.</i>																				
Cerebral tumour . . .	12	5	7	...	4	4	3	...	...	...	1	...	...	1	5	3	2	1	...	...
Cerebral abscess . . .	3	3	...	...	...	1	1	...	...	1	...	3	...	...	...	...	...	...	...	...
Cerebral syphilis . . .	2	2	...	...	...	...	1	1	...	...	...	1	...	...	...	1	...	...	...	...
Cerebral sclerosis . . .	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Chronic hydrocephalus . . .	2	...	2	2	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...
Headache . . . . .	7	6	1	...	1	1	3	...	2	...	...	4	1	2	...	...	...	...	...	...
Cerebral injury . . .	1	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Amnesia . . . . .	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Insomnia . . . . .	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Obscure cerebral disease . . .	8	5	3	1	2	1	...	3	1	...	...	...	2	3	1	2	...	...	...	...
Bulbar paralysis . . .	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Athetosis . . . . .	4	4	...	...	1	...	2	...	1	...	...	...	2	1	1	...	...	...	...	...
Tremor of arm . . . . .	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
General paralysis . . .	13	11	2	...	...	...	1	4	5	3	...	4	5	2	2	...	...	...	...	...
Acute mania . . . . .	3	1	2	...	...	...	1	...	2	...	...	3	...	...	...	...	...	...	...	...
Acute delirious mania . . .	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
Idiocy . . . . .	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Dementia . . . . .	1	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Chorea . . . . .	31	8	23	1	5	22	1	1	...	1	...	3	...	11	16	...	1	...	...	...
Hysteria . . . . .	26	2	24	...	...	9	8	8	1	...	...	4	4	5	8	4	1	...	...	...
Epilepsy . . . . .	16	13	3	...	...	9	2	1	2	2	...	8	5	1	1	1	...	...	...	...
Infantile convulsions . . .	4	3	1	4	...	...	...	...	...	...	...	3	...	1	...	...	...	...	...	...

*continued.*

Cured.		Re- lieved.		Unre- lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	3	6	...	...	2	1	Of the fatal cases: in 1 tubercular tumour of the pons (see Special Abstracts), in 1 the tumour occupied the greater part of both lobes of the cerebellum, and in 1 the tumour grew from the left side of the falx cerebri. In the last case the tumour was secondary to carcinoma of the breast.
...	...	...	...	...	...	3	...	In 1 history of otorrhœa for 8 years, abscess right lateral lobe of the cerebellum; in 1 abscess in right optic thalamus, aortic and mitral valvular disease also in this case; in 1 abscess left hemisphere at upper end of fissure of Rolando (see Special Abstracts).
...	...	...	...	1	...	1	...	In fatal case syphilis 10 years previously. No P.M.
...	...	...	...	...	...	1	...	Admitted for convulsions. Surface of brain and right caudate nucleus affected.
...	...	...	...	...	...	1	1	In the fatal case there was enormous distension of the ventricles, which were tapped at the anterior fontanelle.
1	...	5	...	...	...	1	...	Drowsiness and violent delirium following a "knockdown blow." History of alcoholism.
1	...	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	3 doubtful. Plumbism in 1.
...	...	3	3	2	...	...	...	
...	...	...	1	...	...	...	...	18 were cases of first attack, 8 of second, 2 of third, 3 of fourth or later. Of the cases unrelieved: 1, a man aged 50, was dismissed for misconduct, and 1 was removed by the parents the day after admission. Mitral valvular disease in 18, condition of heart not noted in 1. Acute rheumatism or history of it in 8, rheumatic pains in 2, and a history of rheumatism in the family in 3 more. History of chorea in family in 5. In 1 case pregnancy. The alleged exciting cause in 5 cases fright, in 1 shock from galvanic battery, in 1 blow on the back, in 1 fear of punishment. In 1 case, where it was attributed to working for an examination, acute rheumatism developed while the patient was under treatment. For fatal case see Special Abstracts.
...	...	2	...	2	...	...	...	
...	...	1	...	...	...	...	...	Fits in 4, paraplegia in 4, aphonia in 2, paresis of hand in 2, of leg in 1, vomiting in 3, anorexia nervosa in 5, globus in 1, choreiform movements in 1, tetany in 1.
...	...	9	...	2	2	2	...	
...	...	...	...	...	...	2	1	For fatal case see Special Abstracts.
...	1	...	...	...	...	...	...	Fits in 4, paraplegia in 4, aphonia in 2, paresis of hand in 2, of leg in 1, vomiting in 3, anorexia nervosa in 5, globus in 1, choreiform movements in 1, tetany in 1.
...	...	...	...	...	...	1	...	
3	16	3	6	2	...	...	1	18 were cases of first attack, 8 of second, 2 of third, 3 of fourth or later. Of the cases unrelieved: 1, a man aged 50, was dismissed for misconduct, and 1 was removed by the parents the day after admission. Mitral valvular disease in 18, condition of heart not noted in 1. Acute rheumatism or history of it in 8, rheumatic pains in 2, and a history of rheumatism in the family in 3 more. History of chorea in family in 5. In 1 case pregnancy. The alleged exciting cause in 5 cases fright, in 1 shock from galvanic battery, in 1 blow on the back, in 1 fear of punishment. In 1 case, where it was attributed to working for an examination, acute rheumatism developed while the patient was under treatment. For fatal case see Special Abstracts.
1	15	1	8	...	1	...	...	Fits in 4, paraplegia in 4, aphonia in 2, paresis of hand in 2, of leg in 1, vomiting in 3, anorexia nervosa in 5, globus in 1, choreiform movements in 1, tetany in 1.
1	1	9	2	1	...	2	...	For fatal case see Special Abstracts.
2	1	...	...	...	...	1	...	



*continued.*

Cured.		Re- lieved.		Unre- lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	...	1	...	...	...	...	...	In 4 history of fall or other injury. Of the fatal cases: in 2 myelitis, in 1 hæmorrhage into spinal cord, the result of injury (see 'Lancet,' May, 1891), in 1 sacral malignant growth secondary to malignant disease of prostate, and in 1 malignant growth of cervical vertebræ.
...	1	7	2	2	1	4	1	
...	...	2	...	1	...	...	...	
...	...	1	...	...	...	...	...	In both cases both lower extremities affected. In the fatal case acute anterior poliomyelitis, cervical, lower dorsal, and lumbar regions. The symptoms in this case pointing to tumour in the cervical region, the vertebræ were trephined, but no gross disease was found.
...	...	1	...	...	...	1	...	
...	...	1	...	...	...	...	...	
...	...	1	1	...	...	...	...	Transferred to surgical side for operation.
...	...	1	1	...	...	...	...	
2	...	2	1	...	...	...	...	
...	...	...	3	...	...	...	...	Mind affected in 6. No P.M. in fatal case. Delirium tremens in 1 case. Colic in 8, palsy in 1, history of gout in 3, albuminuria in 3. In 1 due to drinking draught ginger-beer.
...	...	...	1	...	...	...	...	
...	...	...	2	...	...	...	...	
...	...	9	...	1	...	1	...	All suicidal. In the fatal case the patient, an infant, died in the casualty room. Suicidal. Alcoholism also. 1 suicidal.
2	1	1	3	...	...	...	...	
7	...	2	...	...	...	...	...	
1	2	...	...	...	...	...	...	Both suicidal. In the non-fatal case alcoholism also. In the fatal case the patient lived 48 days after taking from half an ounce to two ounces of strong nitric acid; there was broncho-pneumonia at the right base (see Special Abstracts). Taken by mistake instead of lime juice.
...	1	...	...	...	...	1	...	
...	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	1	Suicidal. Suicidal (see Special Abstracts).
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	







TABLE IV.—*Table of Mortality.*

DISEASE.	Total.		Age.										Mor- tality per cent.
	No. dis- charged.	No. died.	Under 2	2-5	-10	-20	-30	-40	-50	-60	-70	Above 70	
1. GENERAL DISEASES.													
Influenza . . . . .	59	9	...	1	...	1	1	3	...	2	1	...	13.2
Scarlet fever . . . . .	19	2	1	1	...	...	...	...	...	...	...	...	9.5
Enteric fever . . . . .	31	11	...	...	1	3	4	...	3	...	...	...	26.2
Erysipelas . . . . .	27	3	...	...	...	...	...	...	2	1	...	...	10
Diphtheria . . . . .	46	42	8	18	12	2	1	1	...	...	...	...	47.7
Hydrophobia . . . . .	...	1	...	...	...	...	...	...	1	...	...	...	...
Pyæmia . . . . .	...	2	...	...	1	1	...	...	...	...	...	...	...
Rickets . . . . .	1	2	1	1	...	...	...	...	...	...	...	...	...
Diabetes mellitus . . . . .	7	4	...	...	...	1	1	1	...	1	...	...	36.3
Purpura . . . . .	2	2	1	...	...	1	...	...	...	...	...	...	...
Scurvy . . . . .	...	1	...	...	...	...	...	1	...	...	...	...	...
Anæmia . . . . .	26	1	...	...	...	1	...	...	...	...	...	...	3.7
Pernicious anæmia . . . . .	...	2	...	...	...	...	...	1	...	1	...	...	...
Leucocythæmia . . . . .	1	1	...	...	...	...	...	...	...	1	...	...	...
Lymphadenoma . . . . .	2	4	...	...	1	...	...	...	1	2	...	...	...
General tuberculosis . . . . .	...	3	2	...	...	...	...	1	...	...	...	...	...
Malignant disease . . . . .	...	1	...	...	...	...	...	...	...	1	...	...	...
2. DISEASES OF THE SKIN.													
Eczema . . . . .	5	1	1	...	...	...	...	...	...	...	...	...	...
Malignant or tubercular disease of skin . . . . .	...	1	...	...	...	...	...	1	...	...	...	...	...
3. DISEASES OF THE RESPIRATORY ORGANS.													
Tubercular laryngitis . . . . .	4	1	...	...	...	...	...	...	1	...	...	...	...
Acute bronchitis . . . . .	44	6	3	2	...	...	...	...	...	1	...	...	12
Chronic bronchitis . . . . .	27	4	...	...	...	1	...	1	1	...	1	...	12.9
Emphysema . . . . .	...	3	...	...	...	...	...	...	1	2	...	...	...
Broncho-pneumonia . . . . .	33	16	9	6	1	...	...	...	...	...	...	...	32.6
Acute pneumonia . . . . .	77	25	...	...	...	...	2	8	6	5	2	2	24.5
Phthisis . . . . .	57	22	...	...	...	5	4	7	3	2	1	...	27.8
Bronchiectasis . . . . .	1	1	...	...	...	...	...	1	...	...	...	...	...
Pleurisy . . . . .	46	1	...	...	...	...	...	...	...	1	...	...	2.1
Empyema . . . . .	22	6	1	2	...	...	...	...	3	...	...	...	21.4
Malignant disease of lung . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	...
"    "    of mediastinum . . . . .	...	4	...	...	...	...	1	...	2	...	1	...	...
4. DISEASES OF THE ORGANS OF CIRCULATION.													
Pericarditis . . . . .	5	3	...	1	1	...	1	...	...	...	...	...	...
Mitral valvular disease . . . . .	39	10	...	...	...	3	2	1	...	2	1	1	20.4
Aortic valvular disease . . . . .	13	2	...	...	...	...	...	...	2	...	...	...	13.3
Mitral and aortic valvular disease . . . . .	17	13	...	...	...	2	2	4	4	...	1	...	43.3
Ulcerative endocarditis . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...

TABLE IV—*continued.*

DISEASE.	Total.		Age.										Mor- tality per cent
	No. dis- charged.	No. died.	Under 2	2-5	10	20	30	40	50	60	70	Above 70	
4. DISEASES OF THE ORGANS OF CIRCULATION— <i>continued.</i>													
Congenital heart disease . . . . .	1	1	1	...	...	...	...	...	...	...	...	...	...
Dilated heart . . . . .	...	3	...	...	...	...	1	...	1	1	...	...	...
Thoracic aneurysm . . . . .	7	4	...	...	...	...	1	2	1	...	...	...	36
5. DISEASES OF DUCTLESS GLANDS.													
Addison's disease . . . . .	1	1	...	...	...	...	1	...	...	...	...	...	...
6. DISEASES OF THE DIGESTIVE ORGANS.													
Retro-pharyngeal abscess . . . . .	...	1	1	...	...	...	...	...	...	...	...	...	...
Stricture of œsophagus . . . . .	3	4	...	...	...	...	...	...	...	3	1	...	57
Gastric ulcer . . . . .	32	6	...	...	...	2	2	...	2	...	...	...	15·8
Hæmatemesis . . . . .	6	1	...	...	...	...	1	...	...	...	...	...	...
Malignant disease of stomach . . . . .	6	6	...	...	...	...	...	2	1	1	2	...	50
Diarrhœa . . . . .	35	15	14	1	...	...	...	...	...	...	...	...	30
Enteritis . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	...
Intussusception . . . . .	2	1	1	...	...	...	...	...	...	...	...	...	...
Internal strangulation . . . . .	...	2	...	1	...	1	...	...	...	...	...	...	...
Malignant disease of intestines . . . . .	5	5	...	...	...	...	...	2	3	...	...	...	...
Obstruction (other forms) . . . . .	1	2	1	...	...	...	...	...	1	...	...	...	...
Perforation of vermiform ap- pendix . . . . .	...	2	...	...	1	1	...	...	...	...	...	...	...
Tubercular ulceration of intes- tine . . . . .	...	2	...	...	...	...	2	...	...	...	...	...	...
Intestinal hæmorrhage . . . . .	1	1	1	...	...	...	...	...	...	...	...	...	...
Acute peritonitis . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	...
Tubercular peritonitis . . . . .	11	4	1	...	1	...	1	1	...	...	...	...	26·6
Cirrhosis of the liver . . . . .	17	14	...	...	...	...	2	6	4	1	1	...	45·1
Obstructive jaundice . . . . .	10	2	...	...	...	...	...	2	...	...	...	...	16·6
Malignant disease of liver . . . . .	3	1	...	...	...	...	...	...	1	...	...	...	...
Abdominal tumour . . . . .	12	4	...	...	...	...	3	...	1	...	...	...	25
7. DISEASES OF THE GENITO- URINARY SYSTEM.													
Acute nephritis . . . . .	19	3	...	...	1	1	1	...	...	...	...	...	13·6
Chronic nephritis . . . . .	27	19	...	1	1	4	4	...	5	3	1	...	41·3
Malignant disease of kidney . . . . .	...	2	...	...	...	1	1	...	...	...	...	...	...
Retention of urine . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	...
8. DISEASES OF THE NERVOUS SYSTEM.													
Acute meningitis . . . . .	2	5	2	...	2	1	...	...	...	...	...	...	...
Tubercular meningitis . . . . .	1	13	1	3	4	2	2	1	...	...	...	...	...
Chronic meningitis . . . . .	...	1	1	...	...	...	...	...	...	...	...	...	...
Cerebral hæmorrhage . . . . .	...	7	...	...	...	1	...	1	3	1	1	...	...
" tumour . . . . .	9	3	...	2	...	...	...	...	...	1	...	...	...
" abscess . . . . .	...	3	...	...	1	1	...	...	1	...	...	...	...
" syphilis . . . . .	1	1	...	...	...	1	...	...	...	...	...	...	...
" sclerosis . . . . .	...	1	1	...	...	...	...	...	...	...	...	...	...
Chronic hydrocephalus . . . . .	1	1	1	...	...	...	...	...	...	...	...	...	...



TABLE IV—*continued.*

DISEASE.	Total.		Age.										Mortality per cent.
	No. discharged.	No. died.	Under 2	2-5	-10	-20	-30	-40	-50	-60	-70	Above 70	
8. DISEASES OF THE NERVOUS SYSTEM— <i>continued.</i>													
Acute mania . . . . .	2	1	...	...	...	...	1	...	...	...	...	...	...
Chorea . . . . .	30	1	...	...	1	...	...	...	...	...	...	...	3·2
Epilepsy . . . . .	14	2	...	...	...	1	...	...	...	1	...	...	12·5
Infantile convulsions . . . . .	3	1	1	...	...	...	...	...	...	...	...	...	...
Paraplegia . . . . .	13	5	...	...	...	1	1	...	2	1	...	...	27·7
Infantile paralysis . . . . .	1	1	1	...	...	...	...	...	...	...	...	...	...
9. POISONING.													
Alcoholic paralysis . . . . .	10	1	...	...	...	...	...	1	...	...	...	...	9
Carbolic acid . . . . .	1	1	1	...	...	...	...	...	...	...	...	...	...
Nitric acid . . . . .	1	1	...	...	...	...	...	...	1	...	...	...	...
Hydrochloric acid . . . . .	...	1	...	...	...	...	...	...	...	1	...	...	...
Arsenic . . . . .	...	1	...	...	...	...	...	...	1	...	...	...	...
10. SURGICAL AND MISCELLANEOUS.													
Marasmus . . . . .	5	5	5	...	...	...	...	...	...	...	...	...	50
Disease of ear . . . . .	3	2	...	...	...	...	2	...	...	...	...	...	...
Cellulitis . . . . .	...	1	...	...	...	...	...	...	1	...	...	...	...
Various . . . . .	15	1	...	...	...	...	...	...	...	1	...	...	...
Unclassified . . . . .	16	3	...	...	...	...	1	1	...	...	1	...	...
11. DISEASES OF THE FEMALE GENERATIVE ORGANS.													
Ovarian tumour . . . . .	3	1	...	...	...	...	...	...	...	1	...	...	...

TABLE V.—*Cases of Infectious Diseases originating in the Hospital.*

Initials.	Sex.	Age.	Disease for which admitted.	Disease originating in hospital.	Date of attack.	Duration of previous residence in hospital.	Result.	Remarks.
E. G.	F.	4	Tubercular glands	Scarlatina	Nov. 13, 1890	6 days	C. Mar. 1	From Alexandra Ward.
H. F.	M.	7	Burn of thigh	"	Nov. 14	4 "	C. Jan. 18	—
C. J.	F.	18	Goitre	"	Nov. 15	8 "	C. Jan. 3	From Alexandra Ward.
B. P.	F.	3	Burn	"	Dec. 10	6 "	C. Jan. 18	From Victoria Ward.
J. A. G.	M.	26	Pleurisy	"	Dec. 19	8 "	C. Mar. 3	From George Ward.
G. P.	M.	1 $\frac{6}{12}$	Burn	"	April 17, 1891	12 "	R. May 4	From Victoria Ward.
W. R.	M.	4 $\frac{1}{2}$	Webbed fingers	"	June 7	47 "	C. Aug. 12	Ditto.
E. F.	F.	7 $\frac{1}{2}$	Tubercular glands	"	June 10	23 "	C. Aug. 1	From Elizabeth Ward.
D. O.	F.	1	Harelip	"	June 26	7 "	D. June 30	From Victoria Ward.
W. G.	M.	2	Crushed toes	"	June 29	9 "	C. July 29	Ditto.
E. W.	F.	19	Disease of elbow	"	July 7	14 "	C. Sept. 10	From Elizabeth Ward.
W. B.	M.	4	Scald	"	Sept. 18	3 "	C. Nov. 18	From Victoria Ward.
A. J.	F.	1 $\frac{6}{12}$	Fractured femur	"	Oct. 9	8 "	D. Oct. 16	Ditto.
M. T.	F.	3	Talipes	"	"	10 weeks	C. Dec. 3	Ditto.
F. C.	M.	2	Scrotal hernia	"	Oct. 15	14 days	C. Dec. 8	Ditto.
M. S.	F.	15	Cleft palate	"	Nov. 7	7 weeks	C. Dec. 19	From Elizabeth Ward.
B. B.	F.	25	—	Rötheln	April 27	—	C. May 4	Probationer.
L. F. P.	F.	—	—	Measles	May 12	—	C. May 23	Ditto.
M. H.	F.	—	—	"	May 14	—	C. May 25	Ditto.
E. P.	F.	—	—	"	May 17	—	C. May 28	Ditto.
A. D.	F.	4	Acute nephritis	"	Nov. 14	22 days	C. Dec. 3	From Anne Ward.
E. H.	M.	5	Lupus of face	"	Nov. 18	5 months	C. Dec. 6	From Arthur Ward.
M. L.	F.	—	—	Mumps	Sept. 23	—	C. Oct. 7	Probationer.
A. P.	F.	25	—	Influenza	May 3	—	C. May 15	Ward maid, Geo. Ward.
M. C.	F.	—	—	"	May 14	—	C. May 25	Nurse, Dorcas Ward.
M. H.	F.	—	—	"	May 18	—	C. May 25	Nurse.
L. D.	F.	26	—	"	July 11	—	C. July 11	Ward maid, Alexandra.

## SPECIAL ANALYSES AND ABSTRACTS.

### I. GENERAL DISEASES.

#### 1. SCORBUTUS; DEATH FROM CEREBRAL HÆMORRHAGE.

G. R.—, æt. 38, female, admitted April 4th, died April 8th, 1891.

Three weeks previous to admission her gums became sore and bled, her teeth became loose, and bruises appeared on her right hip. Later she found bruises over her legs and arms. For twelve months she had taken very few vegetables, no greens, and only about four potatoes weekly. She had worked hard till within a few days before admission.

*On admission.*—Anæmic, earthy-looking. Gums spongy and bleeding, especially round the teeth, which were loose. Breath offensive. Scattered all over the body were small, purple-coloured petechiæ. On the left arm and hand, right hip, and both legs were bruises of considerable size and of different hues. The glands under the jaw were enlarged. The heart-sounds were weak. No enlargement of liver or spleen. Trace of albumen in the urine. No ascites. No œdema. No ophthalmoscopic changes. Temperature 103·8°.

*Progress.*—Severe epistaxis occurred on the night of the 6th. Several fresh hæmorrhages appeared on the legs. On examination of the blood on the 7th it appeared that the number of the red corpuscles was diminished to half, while the white were about the normal number. The hæmoglobin power was 50 per cent. On waking on the morning of the 8th she found she had lost the use of the right arm. In the afternoon she became comatose and died.

*Post-mortem examination.*—Many small, recent, subpericardial hæmorrhages. Recent hæmorrhages in both lungs, into submucous tissue of the renal pelves, beneath and into uterine mucous membrane, in submucous tissue of stomach and intestines. The liver and kidneys showed cloudy swelling. There was a recent extravasation of blood occupying the middle third of the white matter of the left hemisphere, extending from just below the cortex at the vertex to the level of the roof of the lateral ventricle into which it had opened. There was also a recent extravasation of blood in the left hemisphere of the cerebellum.

## 2. LEUCOCYTHÆMIA.

(a) Male, æt. 38, admitted December 29th, 1890, discharged January 18th, 1891, and died at home the next day. He had been repeatedly in the hospital during the preceding four years. The spleen was enormous. The case was remarkable for its chronic character and the improvement which took place from time to time under treatment with arsenic and a mineral water containing a large quantity of chloride of sodium. A full account of the case has been published in the 'Transactions' of the Clinical Society for 1890-1.

(b) Male, æt. 65, admitted November 2nd, 1891, and died within a few hours of admission. He had been an out-patient since August 17th. He came complaining of enlarged glands throughout the body and of weakness of four months' duration. His spleen and liver were found to be considerably enlarged. The lymphatic glands generally were enlarged, and felt quite separate, not matted together as in lymphadenoma. He had had a "brassy" cough from the commencement of the illness.

The blood on examination showed great increase in number of the white corpuscles and rapid breaking down of the red.

*Post-mortem examination.*—Body sparely nourished. Above the clavicles, under the lower jaw, in both axillæ and in both groins, clumps of enlarged glands were visible, not heaped up in masses but still obviously separate. The submaxillary, the supra-clavicular, the axillary, the mediastinal, the prævertebral glands, and also those in the groin, were found to be enlarged. In no case were separate glands fused, the capsule seemed intact in all cases, and there was no sign of past or present inflammation around them. On section they were light grey in colour, soft but not caseous, and from them scarcely any fluid could be expressed by squeezing.

There appeared to have been no pressure on the trachea, œsophagus, or abdominal veins.

The liver was very large, weighing  $5\frac{1}{2}$  lbs., pale and thickly studded throughout with bright white spots and dendritic lines.

Spleen large and soft, weighing nearly 2 lbs. Malpighian follicles larger than natural and unusually distinct.

In the cortex of each kidney were numerous white spots like those in the liver.

In the lower six inches of the ileum was a row of rounded, discrete, grey eminences, each about half an inch long by a quarter wide.

The lungs were bulky, congested, and œdematous.

Heart: aortic valve incompetent owing to atheroma, left ventricle dilated and hypertrophied.

Peritoneum, thyroid, supra-renal capsules, and larynx normal.

Brain showed great œdema of the vertical pia arachnoid, but otherwise normal.



## II. DISEASES OF THE RESPIRATORY SYSTEM.

## 1. EMPYEMA; RESECTION OF RIB; CEREBRAL ABSCESS.

T. W—, a leatherdresser, æt. 42, admitted September 26th, 1891, died October 14th, 1891.

He was suffering from pain in the left side of the chest and shortness of breath, which had commenced to trouble him about ten or eleven weeks previously.

The usual signs of pleuritic effusion on the left side were found to be present, and aspiration was performed, 32 ounces of fetid pus being withdrawn.

On October 2nd resection of rib was performed, and much fetid pus was evacuated. The case proceeded in the ordinary way, apparently favourably, until October 14th. In the afternoon of this day the patient seemed strange in his manner, and just before 6 p.m. he was seized with convulsive movements of the right arm. When spoken to just previously he had appeared aphasic. The movements spread from the arm to the right side of the face, and then to the right leg. There was conjugate deviation of the eyes to the right, preceded by turning of the head, the eyes appearing to follow its movement. The convulsions spread thence to the left eyelid, the left arm, and left leg. Profuse sweating followed. Between 6 p.m. and 7 p.m. there were nine such fits, in the last of which death occurred.

*Post-mortem examination.*—Body well nourished. Left lung quite airless. Empyema cavity empty and bounded by much thickened pleura. Right lung large and oedematous. Heart normal. Liver and kidneys enlarged and congested. Spleen normal.

Brain: In the left hemisphere beneath the angular gyrus, seated in the white matter but just abutting on the grey, was an abscess, roughly spherical, the size of a cherry, with contents consisting of milky pus. No evidence of its presence externally. Membranes and rest of brain normal.

## 2. MEDIASTINAL GROWTH; STRICTURE OF ŒSOPHAGUS.

H. W—, coachman, æt. 48, admitted May 12th, died June 29th.

No illness until about six weeks before admission, when he felt aching pain in the left side, which became continuous. A few days before admission a cough set in, and he was troubled with nausea and regurgitation of food.

*On admission.*—Pale and thin. Slight comparative dullness at the right base, where crepitations were audible. Rhonchi over left lung. No albuminuria. Heart normal. Larynx normal.

*Progress.*—The regurgitation and dysphagia continued. An œsophageal bougie was passed, and appeared to be arrested at the cardiac orifice. The dullness over the right base continued where loud friction was to be heard, and feeble fremitus could be felt. Diarrhœa set in on the morning of June 2nd, and the motions contained blood. In the same afternoon he was suddenly attacked with difficulty in breathing, and rapidly died.

*Post-mortem examination.*—The lower and middle lobes of the right lung were completely consolidated, and on section patches of new growth were found among the pneumonic lung, especially near the root. The glands at the root of the lung were much enlarged, and were composed of soft white neoplastic material. A mass of new growth occupied the lower part of the posterior mediastinum, and the œsophagus was flattened out in front of it. The new growth had ulcerated into the œsophagus about six inches from its commencement, and formed a sharp projection into its lumen.

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### III. DISEASES OF THE DUCTLESS GLANDS.

#### ADDISON'S DISEASE; PHTHISIS.

##### *Fatal Case.*

H. P—, dressmaker, æt. 30, admitted August 27th, 1891, died August 30th, 1891.

For twelve months the patient had noticed that her skin was becoming darker, and during the same time she had been losing flesh and strength. Recently she had been troubled with vomiting. She came to the hospital specially on account of hæmoptysis, which she had had to a slight extent for a few days.

*On admission.*—Very thin, anæmic. The skin generally was of a dark bronze-brown colour. There were numerous freckles on the face and dark patches under the eyes and on the forehead. The bronzing was most marked on the neck, nipples, elbows, backs of hands, axillæ, round the umbilicus, and the fronts and flexures of the knees. The palms of the hands, soles of the feet, and matrices of the nails were comparatively exempt, and there was no darkening of the conjunctiva. The mucous membrane of the mouth was dotted with brown patches, and there were also two similar patches on the tongue. There were signs of phthisis at both apices. The pulse was feeble, 84. The knee-jerks were present. Urine no albumen.

*Progress.*—For the first two days there was frequent retching and vomiting, and she became more prostrate. The vomiting then ceased, but the patient did not rally, and died on the third day after admission.

*Post-mortem examination.*—The supra-renal capsules were each about three times the natural size. The normal shape was preserved. On section the proper tissue was replaced by dense fibrous growth, in which much caseous matter was embedded. There was no thickening around the capsules, and no adhesion. The upper half of the left kidney (that adjoining the supra-renal) was infiltrated with thick white soft caseous material; no normal kidney structure was to be seen in this part, but the rest of the organ and the entire right kidney were healthy. The semi-lunar ganglia seemed rather pale and obscure. No disease of vertebræ.

There was old phthisis in both upper lobes, with mortary masses, old excavation, dense connective tissue, and grey tubercles.

There was no pigmentation of pleuræ or peritoneum.

## IV. ABDOMINAL TUMOUR.

## 1. MALIGNANT DISEASE OF RIGHT SUPRA-RENAL BODY, SIMULATING HYDATID DISEASE OF LIVER.

F. I—, æt. 25, a crane-driver, admitted July 3rd, 1891, left at his own request July 10th, 1891.

He complained of dull aching pain in the loins and right side, also of languor and shortness of breath for the last three months, and of a swelling in the lower part of the right side of the chest, which he had noticed for a month.

He had had no previous illness, and there were no facts of interest in the family history.

He was a thin man. There was evident bulging of the lower part of the right side of the chest, both in front and behind. The costal angle was full and projecting, and the right side of the abdomen was irregularly prominent. The upper limit of the liver dulness was at the fourth rib in the nipple line, at the fifth rib in the axillary line, at the angle of the scapula, behind, whence it passed obliquely downwards to the ninth dorsal spine. The lower limit extended obliquely downwards from the left costal margin in the nipple line to a point about an inch below and to the right of the umbilicus, whence it curved round about two inches above the iliac crest. The edge of the liver could be distinctly felt external to the right rectus.

The surface as felt through the anterior abdominal wall was smooth and apparently cystic in parts. There was very slight tenderness and no thrill, and movement on respiration was not very marked.

At the nipple level the semi-circumference of the right side of the chest measured one inch more than that of the left, while six inches lower it measured two inches more.

No abnormal signs in the chest except that due to displacement by the tumour.

The diagnosis arrived at was hydatid disease of liver, and it was proposed to tap the tumour. Rather than have this done the patient desired to leave the hospital, and he left a week after admission.

With the exception of the occurrence of abdominal pain there was nothing noteworthy while he remained in the hospital.

About a fortnight later he went to St. George's Hospital, where after four weeks he died. The post mortem showed the supposed hydatid disease to be a large growth (round-celled sarcoma), which occupied the position and replaced the right supra-renal capsule. The right lobe of the liver was thinned over it.

## 2. TWO CASES OF HYDATID TUMOUR OF THE PERITONEUM; REMOVAL BY LAPAROTOMY; RECOVERY.

(a) W. W—, boy, æt. 12, admitted July 14th, 1891; discharged August 16th, 1891.

He came to the hospital on account of a "lump" in the abdomen, which had existed for a few months.

The history of the tumour was as follows :—About six months ago, when in bed, he was attacked by a sharp sudden pain in the right hypogastrium, lasting a few minutes. He then discovered a small lump where he felt the pain. He had attacks of pain from time to time during the next three weeks, after which they ceased. The lump remained, gradually increasing in size. Three months ago he had chorea, for which he attended as an out-patient. From this he rapidly recovered. About a week before admission he had another attack of pain, and this persisting he came up to the hospital.

His condition on admission was as follows :—Pale and thin. Below and to the right of the umbilicus there was a rounded, tense, cyst-like mass about the size of an orange. It could be slightly displaced to the right or left but more so to the right, but did not move with respiration. It did not extend into the pelvis or far into the lumbar region. No thrill. No signs of disease elsewhere. Appetite good. Bowels regular.

*Progress.*—On July 17th four attacks of acute pain in the abdomen lasting a few minutes, the last accompanied by vomiting. On July 18th Sir William Mac Cormac performed laparotomy. The tumour was found to be a single hydatid cyst. The cyst, with its adventitious capsule, was dissected out, and the wound closed without drainage. The patient made an uninterrupted and complete recovery.

(b) R. T—, girl,  $\text{æt. } 3\frac{0}{12}$ , admitted June 2nd, 1891; discharged August 17th, 1891.

She was brought to the hospital on account of pain and swelling in the abdomen. The pain was first experienced about a month previously, and the swelling of the abdomen had been noticed about a week.

*Condition on admission.*—Fairly well nourished; pale. Abdomen full and prominent, dull on percussion except near the costal margin. Indistinct thrill. On palpation a tumour about the size of an orange could be indistinctly made out in the umbilical region. No sickness. Bowels constipated. With the exception of some impairment of resonance and the existence of crepitations at the bases of both lungs there were no signs of disease in any of the organs.

*Progress.*—The patient had occasional slight abdominal pain. The tumour became more clearly defined, and was found to extend from an inch above the umbilicus nearly to the pubes. It was elastic, fluctuating, and gave a suggestion of hydatid thrill.

On July 6th the patient was transferred to another ward on account of suspected scarlet fever. She had fever and sore throat, but no definite rash. On July 25th Sir William Mac Cormac performed abdominal section. The tumour was found to be a hydatid cyst containing a dirty yellowish fluid with numerous echinococci. The cyst was adherent to the intestine and bladder, and was removed with some difficulty. The patient made an uninterrupted and complete recovery.

### 3. OVARIAN TUMOUR; STRANGULATION FROM TWISTED PEDICLE; DIFFICULTY OF DIAGNOSIS FROM PERITYPHLITIS; ABDOMINAL SECTION; DEATH.

A. W—,  $\text{æt. } 22$ , housemaid, admitted June 27th, 1891.

On June 23rd she was attacked quite suddenly with pain in the right side and



lower part of abdomen. The pain continued with more or less intensity till admission. She was frequently sick, and her abdomen became decidedly swollen. She was unable to take food on account of its intensifying the pain. On June 25th the catamenia appeared a week before time. There was slight diarrhœa.

There was no history of any previous illness except anæmia, for which she had been an in-patient at the Bath Hospital.

*Condition on admission.*—Very anæmic. Well nourished. Abdomen distended, acutely tender, especially in the right iliac region, and motionless. In the right iliac fossa, and extending to the umbilicus, was a large mass indistinctly fluctuating. Tongue thickly coated. Temp. 101·6°, pulse 100. The symptoms suggested perityphlitis.

*Progress.*—Opium was given internally, and leeches and poultices were applied locally with considerable relief to the patient. The bowels were relieved by enemata. On July 6th a fluctuating tumour could be made out, extending two inches to the left and three inches to the right of the middle line of the abdomen, and from a quarter of an inch above the umbilicus to the pubes. There was slight fulness in the right lateral fornix, apparently connected with the abdominal tumour. The tumour diminished, and the general condition of the patient improved.

On August 14th abdominal section was performed, and the tumour was found to be an ovarian tumour twisted on its pedicle. The patient developed peritonitis and died.

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## V. DISEASES OF THE NERVOUS SYSTEM.

### 1. TUBERCULAR TUMOUR OF PONS VAROLII.

#### *Fatal case.*

C. R.—, boy, æt. 6, admitted February 10th, 1891; died April 26th, 1891.

For a few weeks he had been unable to walk without falling, and it was chiefly on this account that he was brought to the hospital. He had also suffered from vomiting, constipation, incontinence of urine, occipital headache, and pain at the back of the neck. A squint had been noticed for about the same time.

He had suffered from an occasional discharge from the left ear for about twelve months.

*Condition on admission.*—Fairly well nourished. Apathetic, but irritable when disturbed. Unable to keep his balance on attempts at walking. Knee-jerks very brisk. Right eye turned inwards and movement outwards paralysed. Slight paralysis of the lower part of the right side of the face. Large perforation of the left membrana tympani. No optic neuritis.

*Progress.*—The vomiting and tendency to constipation continued. The right facial paralysis gradually became complete. The left sixth nerve became paralysed so that there was double internal squint, and there was over-action of the right internal rectus. The speech became slower and gradually became inarti-



culate. Left hemiplegia developed. The pupils became unequal. Towards the end difficulty of swallowing supervened and emaciation became extreme.

*Post-mortem examination.*—The calvaria and the cerebral sinuses were normal. No meningitis or tubercle. A yellow tubercular nodule the size of a large pea was seen on the surface of the external border of the left hemisphere of the cerebellum, involving the cortex and the white matter just beneath.

The pons was distinctly and uniformly enlarged. Near the junction with the crura (about  $\frac{1}{4}$  inch behind) a yellow tubercular mass was found in the pons, situated in the left half and the posterior part. Immediately behind, the mass, still involving the posterior half only, passed across the middle line to the right half, and for the rest of the pons, nearly to the junction with the medulla, the mass occupied the greater part of the pons. A thin strip of the anterior fibres was spared, but posteriorly the mass lay immediately beneath the floor of the fourth ventricle, except for about  $\frac{1}{4}$  inch, just in front of the junction with the medulla.

No other evidence of disease was found in the body except a caseous gland in the anterior mediastinum and a white nodule in the right kidney.

## 2. CEREBRAL ABSCESS.

(a) *Cerebral abscess; meningitis; pneumonia.*—E. C—, æt. 54, night watchman, admitted October 22nd, 1891; died October 26th, 1891.

On October 17th, about 10 a.m., the patient had a fit, in which he fell down, bruising his forehead and bit his tongue. At 10 p.m. and at midnight on the same day he had other fits, in which he became unconscious, clenched his hands, and rolled his eyes about. On the morning of the 18th, at 7.30 and at 9 a.m., he had two more fits, in which, although he retained consciousness, the muscles of the shoulders, arms, and legs alternately contracted and relaxed. The last fit was on October 19th about 11 a.m., and this lasted about ten minutes, with no loss of consciousness. After this fit he was found to have lost power on the right side. On the 21st it was noticed that the patient could not speak plainly.

There was a history that in 1883 the patient had lost power in both his lower limbs, lasting from December to May, and that two years later he had a similar but slighter attack.

When examined on admission he was lying on his back semi-unconscious, muttering occasionally or smiling vacantly. The right arm was powerless, the right lower extremity was more rigid than the left, the right side of the face moved less than the left, and the mouth at times was drawn over to the left. The knee-jerks were both absent. The plantar cremasteric and epigastric reflexes were present. No absolute loss of sensation. Pupils unequal, left the smaller, no reaction to light. Fundi normal, with the exception of one or two atrophic patches in the right. No apparent oculo-motor paralysis. Some ptosis of left upper lid. Tongue protruded straight, slightly coated. Power of swallowing unaffected. Bowels confined. Urine retained; acid, 1020, trace of albumen.

On the 24th it was noted that the thoracic movements were very irregular, and that the respirations were 13 or 14 to the minute. On the 26th, except that there were profuse perspirations, there was little change in the condition.

*Post-mortem examination*.—Sparely nourished. Slight atheroma of aortic and mitral valves and general atheroma and some dilatation of lower three inches of aorta. Lower lobe of left lung in a state of red and in patches grey hepatisation, with recent acute pleurisy on the surface. The right pleuritic cavity obliterated by old adhesions, and the lung below fibrous and airless, above congested and œdematous. Liver, spleen, and kidneys no marked disease.

*Brain*: Dura mater congested. The convolutions of the central part of the left hemisphere were much flattened as compared with the right, and at the upper end of the left fissure of Rolando there was a patch of tough yellow lymph the size of a sixpence. Most of the vessels on the left side, and to a less extent those on the right, were accompanied by a streak of inflammatory exudation. The patch of lymph was found to overlies the upper extremity of a somewhat triangular abscess-cavity about the size of a walnut, containing thick greenish-brown pus. The wall of the cavity was quite definite, but did not suggest any great chronicity. It was soft and studded with recent hæmorrhages, and just impinged on the cortical grey matter.

There was chronic lepto-meningitis about the base, the pia being thickened and opaque about the Sylvian fissures, chiasma, and cerebellum.

The basilar artery was dilated and sinuous, and its inner surface was dotted with small yellow spots. No embolism or thrombosis.

With the exception of extreme rarefaction of the left petrous bone, the cause of which was doubtful, there was no evidence of ear disease.

(*b*) *Cerebellar abscess; chronic ear disease*.—L. P. B—, boy, æt. 16, admitted July 27th; died July 28th, 1891.

His illness commenced suddenly on the morning of July 21st with pains involving the whole of the head, not localised to one spot, and vomiting. He had shivering but apparently no rise of temperature, according to the doctor who was called in. The pain became more and more severe, and as the malady progressed he became noisily delirious, both at night and during the day. He had complete loss of appetite and was unable to sleep. During the delirium he had twitching of the neck muscles, sweating, and grinding of the teeth. His hands were noticed to tremble when he raised them to clasp his head. The bowels were constipated.

There was a history of discharge from the ears on and off for seven or eight years. There had been no discharge for a month preceding the attack.

*On examination*.—Semi-comatose. Could be roused sufficiently to answer his name. Extremely irritable. Tongue dry and brown. Pulse 84. Respirations 30. Temperature 99°. Urine, trace of albumen. No oculo-motor or other paralyses. Ophthalmoscopic appearances normal. Knee-jerks normal. Two small perforations in right membrana tympani. In left membrana doubtful bulging, no perforation.

*Progress*.—The patient became extremely restless. Breathing accompanied by a loud gurgling noise. The condition suddenly changed a few hours later, he became quiet, rapidly sank, and died without change.

*Post-mortem examination*.—Extensive old adhesions about the upper part of both pleuræ. Both lungs very dark in colour and œdematous in their lower halves. Bronchial glands on the right side enlarged and caseous. In the right lateral lobe of the cerebellum there was an abscess about the size of a walnut,

lying immediately under the surface, full of thick, blood-stained pus. The dura mater covering the posterior part of the posterior surface of the right petrous bone was separated from the bone by a collection of very offensive pus. On the more anterior portion of the same aspect of the bone there was a little lymph on the dura. No thrombosis of lateral sinus or internal jugular vein. There was a large perforation of the right tympanic membrane.

### 3. CEREBRAL EMBOLISM: ULCERATIVE ENDOCARDITIS.

F. S—, girl, æt. 17, admitted March 22nd; died May 26th, 1891.

She had never been very strong, but, except smallpox when five years of age, had been quite free from illness until about two weeks before admission. She then began to suffer from pains in her arms and legs, and from headache. She also complained of shivering and cold, and sat over the fire. On March 15th her headache became worse and her speech became affected. Next day she had lost power in the left arm and leg.

*On admission.*—Anæmic but well nourished. Complete right hemiplegia. No anæsthesia. Completely aphasic. Mitral systolic murmur. No albuminuria.

*Progress.*—No improvement in the paralysed limbs took place. The patient was extremely irritable. She continued almost completely aphasic. The temperature throughout was irregular, generally having a range of about 4° in the twenty-four hours. She emaciated rapidly. Albuminuria developed. The heart action became feebler.

*Post-mortem examination.*—There were vegetations on the mitral valve of the heart. Broncho-pneumonia of the right upper lobe of the lung. Infarcts in the spleen. The left kidney was almost entirely composed of firm, yellowish-white infarcts, none of which showed signs of softening. The left renal artery was completely blocked by recent firm, dry, white clot.

In the centre of the left cerebral hemisphere was a mass of white softening involving the whole of the central ganglia.

### 4. EPILEPSY.

#### *Fatal Case.*

J. S—, male, æt. 19, admitted September 28th; died October 6th, 1891.

At the age of ten, after falling down a staircase, he was said to have been insensible for a time and to have had fits. There seems to have been no recurrence of the fits until the present illness.

This began about three months previous to admission with headache and depression of spirits, which were attributed to alarm caused by witnessing an accident. On September 21st he was noticed to have a difficulty of speech, which gradually increased. On the morning of September 25th he had a fit, during which he fell into the fire, foamed at the mouth, and passed fæces unconsciously. The fit was followed by a severe attack of vomiting. On the 26th he had three fits, and on the 27th a great many.

*Condition on examination.*—Convulsive paroxysms, in which he struggled, attempted to get out of bed, and seized hold of anyone near him, alternated with periods during which he lay on his back, looked round, and sometimes seemed to notice if spoken to, but never uttered a word. During the intervals there were occasional twitchings of the face, more marked on the right side. No paralysis, no rigidity. No albuminuria.

*Progress.*—In the evening he became at times very violent, throwing his arms about, and during these seizures he occasionally uttered two or three words quite distinctly, such as "I will" or "No, I won't." On the 29th he was fairly quiet, but at times rhythmically moved each arm, more frequently the right. He raised the whole limb from the shoulder, the elbow remaining semi-flexed and the forearm semi-pronated. At the same time, or occasionally just before or after the movement of either arm began, the muscles of the right side of the face were vigorously contracted, the angle of the mouth being drawn over to the right. From this time until he died similar convulsive movements recurred at intervals. He made no sign of speech after the evening of the 28th. The temperature rose to 103° on the 5th.

*Post-mortem examination.*—The vessels of the dura mater were over-full. The pia arachnoid was intensely congested, and there were several small hæmorrhages around large vessels. The vessels throughout the brain surface appeared dilated. There were numerous hæmorrhages in the lungs, from the size of a pea to that of a walnut. There were also some epicardial hæmorrhages.

## 5. CHOREA.

### *Fatal Case.*

A. E. N—, girl, æt. 7, admitted December 24th, 1820; died January 13th. 1821.

No history of rheumatism either in patient or her family.

Her illness was dated from December 4th, when she seems to have been in some fear of a beating at school. At first she was unusually quiet and listless. On December 8th she could not stand, and she complained of pains in the knees and arms. On the following day irregular and jerky movements of the hands commenced. The movements gradually increased until admission.

*On admission.*—The usual movements of legs, arms, and face were to be seen. There was a mitral systolic murmur. The knee-jerks were brisk. There was no albumen. No rheumatic nodules.

*Progress.*—The movements soon diminished and the child became quiet, but she seemed very weak and ill. On the afternoon of January 10th cough and retching proved troublesome. Next evening she was worse, and was sick nearly all the night. On the 12th she was very prostrate, eyes sunken, pulse extremely feeble and rapid. She complained of pain at her heart. She died the following day. The temperature was scarcely ever above normal.

*Post-mortem examination.*—Body well nourished. The left ventricle was dilated, and the mitral valve was incompetent and was dotted with minute granulations. The bronchi were full of muco-pus.



## VI. POISONING.

1. NITRIC ACID POISONING; DEATH AFTER SEVEN WEEKS;  
EXTREME CONTRACTION OF THE PYLORUS.

A. T—, æt. 41, a married woman, admitted January 5th, 1891; died February 24th, 1891.

The patient, who had been depressed in spirits for two months since a mis-carriage, on January 5th swallowed about one tablespoonful of strong nitric acid. She was brought to the hospital two and a half hours later.

The greater part of the lower lip was covered with a yellow stain, and there was a similar streak extending from the mouth to the chin.

The cheeks, palate, fauces, tonsils, pharynx, and the greater part of the tongue were of a uniform opaque white colour.

On each side of the dorsum of the tongue there were yellow stains, between which there was a bleeding, eroded tract.

There was thick, tenacious mucus at the back of the pharynx, and mucus was also constantly running from the mouth. There was frequent retching and vomiting of frothy, thick, grumous matter.

The patient complained of a burning pain along the course of the œsophagus and in the stomach. The temperature was subnormal.

*Progress.*—During the first week there was frequent vomiting, and the patient continued to suffer from pain. On January 10th an erythematous rash appeared, chiefly over the right buttock and hip, but also partly over the left. In one or two places there were large, uniform pink patches, whilst between these and around their margins there were slightly elevated spots. The larger patches appeared to have formed from coalescence of the small ones. On the 11th there was a papular rash over the dorsum of each foot. In a few days all traces of the rash had disappeared. On the evening of the 12th the patient twice vomited nearly half a pint of pure venous blood, which subsequently clotted. The vomiting of blood was repeated on the 13th. For about a week after this there was little or no vomiting, but on the 27th vomiting commenced again, and occurred repeatedly from this time onwards. The patient became feebler and apathetic, and wasted very much. Although she vomited she had no pain or difficulty in swallowing. The amount vomited was altogether very considerable, and appeared to be more than she swallowed.

*Post-mortem examination.*—Great emaciation. Mouth, fauces, and œsophagus appeared quite healthy. The stomach was small, dark in colour, and contained about three quarters of a pint of thin brown fluid. The surface was unnaturally smooth, and very large veins showed prominently through its coats. The pylorus was tightly contracted, only admitting a small sound, but on section the walls of the stomach which surrounded the pyloric opening appeared to be healthy.

The intestines were hyperæmic throughout almost their whole extent, but were not otherwise diseased.

The trachea and bronchi appeared normal.

The lower part of the right lung was airless and hyperæmic, and presented



closely-set islets of broncho-pneumonia. The left lung was somewhat hyperæmic, but otherwise healthy.

## 2. POISONING WITH ARSENIC; DEATH AFTER EIGHTEEN DAYS; CORROSION OF STOMACH; FATTY LIVER AND KIDNEYS.

J. A. L—, brass finisher, æt. 43, admitted June 6th, 1891; died June 24th, 1891.

On the morning of admission the patient took three-pennyworth of white arsenic. The cause appears to have been domestic unhappiness, he having been married one week and having quarrelled all the time.

In about two minutes after swallowing the poison the symptoms came on—sweating, inability to stand, followed by soreness of throat, abdominal pain, diarrhœa, and vomiting.

He was seen within two hours of taking the poison. He then complained of great coldness, his nose, hands, and lips were blue, his pulse was extremely weak, while his pupils were extremely contracted and did not react to light. He vomited several times in the receiving room. There was slight epigastric tenderness, with rigidity of the recti muscles. He was given repeated doses of freshly-prepared hydrated peroxide of iron, and the ammonia used in the preparation seemed to revive him. This was followed by castor oil. The urine contained about one fourth albumen.

*Progress.*—The abdominal pain continued for about two days. Diarrhœa proved very troublesome for about ten days, being most severe about the fifth, sixth, and seventh days, when the bowels were opened eleven times in the twenty-four hours. Occasionally there was blood in the stools. There was great thirst. The gums became sore and ulcerated, and the breath was very offensive. The tongue became coated with a thick yellow fur, and later it was dry, brown, and fissured. Albuminuria continued, and arsenic was found in the urine. About the end of the first week the mental condition became peculiar, and the patient had delusions. He steadily emaciated, and grew feebler. On June 22nd a papular eruption appeared, at first on the back and later on the forehead, face, arms, trunk, and legs. It was most abundant on the forehead and face.

The temperature as a rule was normal or subnormal, but on one or two evenings it was as high as 100° F.

The patient died early on the morning of the 24th. Before death he had hiccough, and was noisy and groaned incessantly.

*Post-mortem examination.*—Body wasted. Traces of papular eruption still present. Liver and kidneys richly fatty. Stomach at lower part of cardiac end blackened and thickened. Heart pale, rather large and flabby. Arsenic was found in the liver and kidneys by Dr. Bernays.

# SURGICAL REPORT.

1891.

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By E. C. STABB.

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## *Preface.*

THE following report has been compiled on similar lines to its predecessors. As a dressing for operation wounds the double cyanide gauze has largely replaced iodoform, as has the solution of perchloride of mercury similarly replaced carbolic acid as a lotion. The use of drainage-tubes in the treatment of operation wounds has almost been abolished.

Koch's treatment has been tried in several cases of tuberculous joint and skin affections, producing a general reaction in all, and a local reaction in the skin cases, but apparently no local change in the joint cases. No benefit was derived from the treatment in any case.



*General Surgical Statement, not including the Ophthalmic Cases.*

Number of surgical beds . . . . .	241
„ of surgical patients in hospital, January 1st, 1891	{ Males 113 Females 78
„ „ „ „ December 31st, 1891	{ Males 141 Females 86
„ „ „ treated to a termination in 1891 . . .	2412

	Total.	Males.	Females.
Discharged cured . . . .	1842	1170	672
„ relieved . . . .	274	203	71
„ unrelieved . . . .	121	63	58
Died . . . .	175	107	68
Totals . . . .	2412	1542	869

Average number of deaths 7·2 per cent.

„ „ days in the hospital 29·12.



TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.									Duration before admission.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated.		
GENERAL DISEASES.																				
Erysipelas . . .	16	14	4	2	1	8	7	5	1	2	22	8	...	...	...	...	...	...		
Pyæmia . . .	2	...	...	...	2	...	...	...	...	...	2	...	...	...	...	...	...	...		
Syphilis—																				
a. Primary . . .	2	1	...	...	1	1	1	...	...	...	...	1	...	2	...	...	...	...		
b. Secondary . . .	2	35	...	...	14	22	...	1	...	...	...	...	13	7	11	6	...	...		
c. Tertiary . . .	7	6	...	...	1	2	4	5	1	...	...	...	...	2	3	2	5	1		
LOCAL DISEASES.																				
Carcinoma—																				
Scirrhus of breast . . .	...	6	...	...	...	...	1	3	1	1	...	...	...	2	2	2	...	...		
Do. and glands . . .	...	23	...	...	...	...	2	11	4	6	...	...	1	...	8	7	7	...		
Recurrent of breast and glands . . .	...	19	...	...	...	...	4	7	5	3	...	...	4	6	7	1	1	...		
Palate . . .	...	2	...	...	...	1	...	...	...	1	...	...	...	...	1	...	1	...		
Œsophagus . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...		
Pylorus . . .	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...		
Colon . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...		
Rectum . . .	7	5	...	...	...	...	1	2	4	5	...	...	...	...	4	3	5	...		
Vagina . . .	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...		
Bladder . . .	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...		
Epithelioma—																				
a. Lip . . .	3	...	...	...	...	...	...	1	...	2	...	...	...	...	1	...	2	...		
b. Tongue . . .	15	...	...	...	...	...	1	5	5	4	...	...	...	1	10	1	3	...		
c. Floor of mouth . . .	3	...	...	...	...	...	...	...	2	1	...	...	...	...	1	2	...	...		
d. Mucous mem. of cheek . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...		
e. Tonsil . . .	3	...	...	...	...	...	2	...	1	...	...	...	...	2	1	...	...	...		
f. Larynx . . .	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...		
g. Skin of neck . . .	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...		
h. Penis . . .	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...		
i. Humerus . . .	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...		
j. Scar of leg . . .	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...		
k. Heel . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...		
l. Toe . . .	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...		
m. Secondary glands of neck . . .	2	...	...	...	...	...	...	1	...	1	...	...	...	...	1	1	...	...		
n. Do., recurrent . . .	2	...	...	...	...	...	...	...	2	...	...	...	...	...	1	...	1	...		
o. Recurrent of face . . .	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...		

according to authorised Nomenclature.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
3	12	8	7	...	...	...	...	...	29	...	...	1		Fatal case: empyema; ? septicæmia.
2	...	...	...	...	...	...	...	...	...	...	...	2		Injury to tibia 1; no history of injury 1.
1	...	1	1	...	...	...	...	...	2	1	...	...		Phagedænic sores 2.
5	5	17	9	1	...	...	...	...	33	3	...	1		Fatal case: abortion. P.M.—Ulceration of intestine.
...	3	3	6	1	...	...	...	...	12	1	...	...		
...	...	3	3	...	...	...	...	...	6	...	...	...		
2	2	13	5	1	...	...	...	...	17	...	4	2		1 transferred to Home. Fatal cases: septicæmia 1, erysipelas 1.
1	6	8	4	...	...	...	...	...	15	1	3	...		Erysipelas 1. Second recurrence in 3.
...	...	2	...	...	...	...	...	...	1	...	1	...		1 refused operation; 1 excision of superior maxilla.
...	...	...	...	...	...	1	...	...	...	...	...	...		1 Gastrostomy.
1	...	...	...	...	...	...	...	...	...	...	...	...		1 Gastro-jejunostomy. Fatal from collapse.
1	...	...	...	...	...	...	...	...	...	...	...	...		1 Abdominal exploration and right inguinal colotomy.
2	3	3	3	1	...	...	...	...	1	3	6	2		Fatal cases: heart disease 1, hæmorrhage from bowels 1.
...	1	...	...	...	...	...	...	...	...	...	1	...		Refused treatment.
...	...	1	...	...	...	...	...	...	...	...	...	1		Exhaustion.
1	...	2	...	...	...	...	...	...	2	...	1	...		Refused operation 1.
2	5	5	3	...	...	...	...	...	7	2	6	...		Floor of mouth involved in 3, tonsil in 1.
1	1	1	...	...	...	...	...	...	...	...	3	...		Too extensive for operation.
...	...	1	...	...	...	...	...	...	1	...	...	...		Excised.
...	2	...	1	...	...	...	...	...	...	...	3	...		Too extensive for operation.
...	...	1	...	...	...	...	...	...	...	1	...	...		Tracheotomy.
...	...	1	...	...	...	...	...	...	1	...	...	...		Excised.
1	...	...	...	...	...	...	...	...	...	...	1	...		Refused operation.
...	...	1	...	...	...	...	...	...	1	...	...	...		Spontaneous fracture; secondary to carcinoma of rectum.
...	...	1	...	...	...	...	...	...	1	...	...	...		Old necrosis of tibia.
...	...	1	...	...	...	...	...	...	1	...	...	...		Mikulicz's operation.
...	...	...	...	1	...	...	...	...	1	...	...	...		Secondary fungating mass in groin.
...	1	1	...	...	...	...	...	...	2	...	...	...		Old epithelioma of lip; second recurrence 1.
1	1	...	...	...	...	...	...	...	...	...	1	1		Fatal case: shock.
...	1	...	...	...	...	...	...	...	1	...	...	...		

TABLE I.—*Abstract, showing Diseases, &c, in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic	Not stated.
<b>LOCAL DISEASES—continued.</b>																		
Rodent ulcer . . .	1	2	...	...	...	...	...	1	2	...	...	...	...	1	...	...	2	...
Malignant of face . .	1	2	...	...	...	...	...	...	3	...	...	...	...	...	1	...	2	...
„ neck . . .	4	...	...	2	1	...	...	...	1	...	...	...	...	1	3	...	...	...
„ mediastinum . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
„ liver . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
„ bile ducts . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
„ abdomen . . .	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
<b>Sarcoma—</b>																		
Breast (recurrent) . .	...	2	...	...	...	...	...	2	...	...	...	1	...	1	...	...	...	...
Testicle . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Kidney . . .	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Skin . . .	2	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...
Submaxillary glands .	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Inferior maxilla . . .	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Sternum (recurrent) .	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
Radius . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Femur . . .	2	...	...	1	...	...	1	...	...	...	...	...	...	...	...	2	...	...
a. Lymphadenoma . . .	2	1	2	...	1	...	...	...	...	...	...	...	...	...	...	...	3	...
b. Parotid tumour . . .	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...
c. Adenoma . . .	...	6	...	...	2	2	2	...	...	...	...	...	...	1	...	3	2	...
d. Angioma (recurrent) .	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
e. Nævus . . .	2	4	4	...	2	...	...	...	...	...	1	...	...	...	2	2	1	...
f. Fibroma . . .	...	2	...	...	...	...	...	1	1	...	...	...	...	...	...	...	2	...
g. Myxo-fibroma . . .	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
h. Simple epulis . . .	1	1	...	1	...	...	1	...	...	...	...	...	...	...	1	1	...	...
i. Do. (recurrent) . . .	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...
j. Papilloma . . .	...	2	...	...	1	...	...	...	1	...	...	...	...	...	1	...	1	...
k. Adenoid vegetations .	1	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	2	...
l. Polypus of ext. meatus .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
m. „ naso-pharynx . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
n. „ nasal . . .	3	1	...	...	...	...	1	1	2	...	...	...	...	...	1	2	1	...
o. „ rectal . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
p. Lipoma . . .	1	1	...	...	...	4	5	1	2	...	...	...	1	...	1	1	9	...
q. Exostosis of palate .	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
r. „ femur . . .	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
s. „ fibula . . .	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...
t. „ subungual . . .	2	1	...	...	1	1	1	...	...	...	...	...	...	...	2	...	1	...

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	1	1	1	...	...	...	...	...	2	...	1	...	Forehead 1, thigh 1, recurrent of face and jaw 1.
...	2	1	...	...	...	...	...	...	...	...	3	...	Cheek 2 (1 third recurrence); parotid region 1, recurrent. All too extensive for operation.
...	3	...	1	...	...	...	...	...	...	...	4	...	3 too extensive for removal; 1 albuminuria.
...	1	...	...	...	...	...	...	...	...	...	1	...	Sloughing mass in axilla. Fatal from exhaustion.
...	...	1	...	...	...	...	...	...	...	...	1	...	Exploration.
...	...	...	1	...	...	...	...	...	...	...	1	...	Exploration.
...	...	1	...	...	...	...	...	...	...	...	1	...	? omentum.
...	1	...	1	...	...	...	...	...	2	...	...	...	Same case readmitted for second and third recurrence.
...	...	1	...	...	...	...	...	...	1	...	...	...	Castration.
...	...	1	...	...	...	...	...	...	...	...	1	...	Fatal from scarlet fever in medical ward.
...	...	2	...	...	...	...	...	...	1	...	1	...	1 pedunculated of elbow, 1 disseminated melanotic.
...	...	1	...	...	...	...	...	...	...	...	1	...	Apparently primary. Too extensive for removal.
...	...	1	...	...	...	...	...	...	1	...	...	...	Myeloid; removed.
...	...	...	...	...	...	...	1	...	1	...	...	...	Fourth recurrence; scraped, &c.
...	...	1	...	...	...	...	...	...	1	...	...	...	Myeloid; excised.
...	...	...	2	...	...	...	...	...	2	...	...	...	Ossifying spindle-celled 1, myeloid 1.
2	...	...	...	1	...	...	...	...	1	...	1	1	Fatal case: from pressure on trachea.
...	...	1	...	...	...	...	...	...	1	...	...	...	? adenoma.
1	1	4	...	...	...	...	...	...	6	...	...	...	All of breast; 1 double.
...	...	1	...	...	...	...	...	...	1	...	...	...	In scar of old excision on shoulder.
...	3	1	1	1	...	...	...	...	3	1	...	2	Fatal cases: shock after operation 1; ? cause 1, no operation.
...	...	2	...	...	...	...	...	...	2	...	...	...	Skull 1, palmar fascia 1.
...	1	...	...	...	...	...	...	...	1	...	...	...	Of brachial plexus.
1	1	...	...	...	...	...	...	...	2	...	...	...	Upper jaw 1, lower 1.
...	1	...	...	...	...	...	...	...	1	...	...	...	Upper jaw (readmitted).
...	1	1	...	...	...	...	...	...	2	...	...	...	Face 1 (multiple), tongue 1.
2	...	...	...	...	...	...	...	...	2	...	...	...	Pharynx.
1	...	...	...	...	...	...	...	...	1	...	...	...	Third recurrence.
...	1	...	...	...	...	...	...	...	1	...	...	...	All recurrent. Fatal case: meningitis, old disease of cribriform.
2	1	1	...	...	...	...	...	...	3	...	...	1	
...	1	...	...	...	...	...	...	...	1	...	...	...	1 diffuse, 1 fibro-lipoma; 1 no operation.
...	8	3	...	1	...	...	...	...	11	...	1	...	Ivory.
...	1	...	...	...	...	...	...	...	1	...	...	...	Lower epiphysis.
...	...	1	...	...	...	...	...	...	1	...	...	...	Upper extremity.
...	...	...	1	...	...	...	...	...	1	...	...	...	1 recurrent.
...	3	...	...	...	...	...	...	...	3	...	...	...	

TABLE I.—Abstract, showing Diseases, &amp;c., in Classes,

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated.
LOCAL DISEASES—continued.																		
<i>Cysts—</i>																		
<i>a.</i> Dermoid . . . . .	3	2	3	...	1	1	...	...	...	...	...	1	...	1	2	1	...	...
<i>b.</i> Do. (recurrent) . . . . .	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
<i>c.</i> Sebaceous . . . . .	3	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	3	...
<i>d.</i> Alveolar . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
<i>e.</i> Of posterior triangle of neck . . . . .	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...
<i>f.</i> Congenital sacral . . . . .	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
<i>g.</i> Ovarian . . . . .	...	5	...	...	1	...	...	2	1	1	...	...	...	...	1	1	3	...
<i>h.</i> Of broad ligament . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
<i>i.</i> Of epididymis . . . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
<i>j.</i> Cystic testicle . . . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
NERVOUS SYSTEM.																		
Facial paralysis . . . . .	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Neuralgia, 5th nerve . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Spasmodic torticollis . . . . .	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...
Musculo-spiral paralysis . . . . .	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Dislocation of ulna nerve . . . . .	1	1	...	...	...	1	1	...	...	...	...	...	...	1	...	...	1	...
Old division of ulna nerve . . . . .	2	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...
Do. median . . . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
False neuromata of stump . . . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Infantile paralysis . . . . .	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...
CIRCULATORY SYSTEM.																		
Aneurysm . . . . .	4	...	...	...	...	1	3	...	...	...	...	...	1	2	...	1	...	...
Cirroid aneurysm . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Dilated abdominal aorta . . . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Varicose veins . . . . .	31	8	...	...	11	23	2	3	...	...	...	...	2	2	6	4	20	5
Thrombosis . . . . .	...	3	...	...	2	...	1	...	...	...	1	1	1	...	...	...	...	...
Phlebitis . . . . .	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
Impaired circulation in leg . . . . .	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Hæmorrhage . . . . .	3	1	1	...	...	...	...	3	...	...	4	...	...	...	...	...	...	...
Gangrene—																		
<i>a.</i> Finger . . . . .	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
<i>b.</i> Leg . . . . .	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
<i>c.</i> Foot . . . . .	3	...	...	...	...	1	1	...	...	1	...	1	...	...	1	1	...	...
<i>d.</i> Toes . . . . .	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...



according to authorised *Nomenclature*— continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	3	...	1	1	...	...	...	...	5	...	...	...	...	Second recurrence.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	2	1	...	...	...	...	...	...	3	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Lower jaw.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	Thin-walled serous cyst.
...	...	...	...	...	...	...	1	...	...	...	1	...	...	
1	...	1	3	...	...	...	...	...	4	...	1	...	...	1 transferred to Adelaide. Ovariectomy 4 (1 double).
...	1	...	...	...	...	...	...	...	...	...	1	...	...	Purulent peritonitis.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Excised.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	Castration.
...	1	...	...	...	...	...	...	...	...	...	1	...	...	? cause.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Excision of mental nerve.
...	...	1	...	1	...	...	...	...	...	1	1	...	...	Excision of portion sp. acc. nerve, and posterior branches, upper 3 cervical nerves in 1 case.
...	1	...	...	...	...	...	...	...	...	...	1	...	...	Involved in callus. Refused operation.
...	...	1	1	...	...	...	...	...	2	...	...	...	...	1 due to injury, 1 ? cause.
...	1	...	...	1	...	...	...	...	...	1	1	...	...	Both sutured.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Unfit for operation.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	9 months after amputation.
...	...	...	2	...	...	...	...	...	2	...	...	...	...	Amputation in both cases.
...	1	...	3	...	...	...	...	...	2	...	1	1	...	Common carotid 1, external carotid 1, ilio-femoral 1, popliteal 1.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	Occipital region; excised.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	18	20	...	...	...	...	...	37	...	2	...	...	Abdominal wall 1, all others of leg (double in 6)
...	1	2	...	...	...	...	...	...	3	...	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Opposite limb previously amputated for embolic gangrene.
2	2	...	...	...	...	...	...	...	4	...	...	...	...	3 from varicose veins, 1 after circumcision.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	? cause. Amputation.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	Embolic. Amputation of thigh.
...	...	...	3	...	...	...	...	...	2	...	1	...	...	Raynaud's disease 2, senile 1. Amputation in all.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Diabetic. No operation.

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.									Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60		Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated.
<b>DUCTLESS GLANDS.</b>																			
Cystic bronchocele . . .	3	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	3	...
Simple hypertrophy of thyroid . . .	2	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...
<b>RESPIRATORY SYSTEM.</b>																			
Tuberculous laryngitis . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Obstruction after trache- otomy . . .	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Old empyema . . .	5	...	2	...	3	...	...	...	...	...	...	...	...	...	...	1	...	4	...
<b>LYMPHATIC SYSTEM.</b>																			
Lymphangitis . . .	2	...	...	1	...	...	1	...	...	...	...	...	2	...	...	...	...	...	...
Simple adenitis . . .	3	6	1	...	3	4	1	...	...	...	1	...	3	...	2	1	2	...	...
Tuberculous adenitis . . .	21	22	1	11	16	9	3	2	1	...	...	1	...	1	10	9	22	...	...
Spurious elephantiasis . . .	2	...	...	...	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...
<b>DIGESTIVE SYSTEM.</b>																			
Acute glossitis . . .	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
Mercurial stomatitis . . .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Peritonsillar abscess . . .	1	1	...	...	1	...	1	...	...	1	1	...	...	...	...	...	...	...	...
<b>Hernia—</b>																			
Inguinal, reducible . . .	33	7	3	3	14	14	4	1	1	...	1	...	3	2	1	3	30	...	...
"    irreducible . . .	13	1	2	...	2	...	6	2	2	1	...	...	...	...	2	...	11	...	...
"    strangulated . . .	30	...	2	1	...	5	10	4	6	2	29	1	...	...	...	...	...	...	...
Femoral, reducible . . .	1	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	2	...	...
"    irreducible . . .	1	8	...	...	...	1	3	3	2	...	1	1	...	2	...	5	...	...	...
"    strangulated . . .	16	...	...	...	...	6	4	1	5	15	1	...	...	...	...	...	...	...	...
Umbilical, irreducible . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...
"    strangulated . . .	4	...	...	...	...	...	3	1	...	4	...	...	...	...	...	...	...	...	...
Ventral, reducible . . .	2	...	...	...	...	1	1	...	...	...	...	...	...	...	2	...	...	...	...
"    irreducible . . .	2	2	...	...	...	2	...	1	1	...	...	...	...	...	...	3	...	...	...
Hydrocele of old hernial sac . . .	2	...	...	...	...	2	...	...	...	...	1	...	...	...	...	1	...	...	...
Acute intestinal obstruct <sup>n</sup> . . .	2	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Chronic " " . . .	6	...	...	...	1	1	2	2	...	...	...	...	...	2	1	...	1	...	...
Ulceration of colon . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Prolapse of colon . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Artificial anus . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Fæcal fistula . . .	1	2	...	1	1	...	1	...	...	...	...	...	...	...	1	1	1	...	...
Proctitis . . .	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Stricture of rectum . . .	1	2	...	...	...	1	1	1	...	...	...	...	...	...	...	...	3	...	...
Fissure of anus . . .	1	3	...	...	2	...	2	...	...	...	1	...	...	...	1	2	...	...	...
Hæmorrhoids . . .	9	14	...	...	8	7	4	3	1	...	...	...	...	...	...	6	17	...	...
Fistula in ano . . .	20	8	1	...	3	7	12	3	2	...	1	5	6	3	3	10	...	...	...
Prolapsus ani . . .	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	...	1	2	...	...	...	...	...	3	...	...	...	Removal of left lobe in 2, and encapsuled tumour in 1.
...	...	...	2	...	...	...	...	...	2	...	...	...	Removal of one lobe in each.
...	...	...	1	...	...	...	...	...	1	...	...	...	Tracheotomy. Pregnant; labour induced.
...	...	...	1	...	...	...	...	...	1	...	...	...	Exploration.
...	1	...	2	2	...	...	...	...	1	4	...	...	Sinus in each; 2 readmissions.
...	1	1	...	...	...	...	...	...	2	...	...	...	Both of leg.
1	4	3	1	...	...	...	...	...	8	...	1	...	Fatal case: sloughing glands after measles. Erysipelas 1 case.
1	6	25	11	...	...	...	...	...	42	1	...	...	
...	...	...	2	...	...	...	...	...	1	1	...	...	Same case. Leg amputated on readmission.
...	1	...	...	...	...	...	...	...	1	...	...	...	? cause. Submaxillary incision.
...	...	1	...	...	...	...	...	...	1	...	...	...	
2	...	...	...	...	...	...	...	...	2	...	...	...	Incised.
3	2	10	23	2	...	...	...	...	28	8	3	1	Double in 7; 1 readmission; 2 refused treatment.
6	3	3	2	...	...	...	...	...	4	7	...	3	1 became strangulated after admission.
8	7	12	2	1	...	...	...	...	28	...	...	2	
1	...	...	...	1	...	...	...	...	1	1	...	...	1 double.
1	5	1	2	...	...	...	...	...	4	2	3	...	
3	...	9	2	1	1	...	...	...	10	1	...	5	
1	...	...	...	...	...	...	...	...	...	1	...	...	
3	...	...	1	...	...	...	...	...	1	...	3	...	Irreducible femoral hernia in 1.
...	...	2	...	...	...	...	...	...	...	2	...	...	Umbilical hernia in 1.
...	2	2	...	...	...	...	...	...	1	3	...	...	1 recurrent after radical cure.
...	...	1	1	...	...	...	...	...	2	...	...	...	No communication with abdominal cavity.
...	1	1	...	...	...	...	...	...	1	...	1	...	Volvulus 1, band 1.
2	1	1	1	1	...	...	...	...	2	1	...	3	
...	1	...	...	...	...	...	...	...	...	1	...	...	
1	...	...	...	...	...	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	Circular enterorrhaphy with Senn's rubber ring.
...	...	...	1	1	...	1	...	...	1	1	1	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	2	1	...	...	...	...	...	...	3	...	...	2 syphilitic.
1	...	3	...	...	...	...	...	...	3	1	...	...	
2	...	17	3	1	...	...	...	...	20	1	2	...	2 recurrent.
...	5	19	4	...	...	...	...	...	28	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	...	...	



according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Incised.
...	...	...	...	1	...	...	...	...	...	...	...	...	1	Admitted for flexion of hip and ? morbus coxæ.
1	...	...	...	...	...	...	...	...	...	...	...	...	1	Vermiform appendix removed, &c.
2	4	1	...	...	...	...	...	...	...	7	...	...	...	Congenital 5, inflammatory 2.
...	...	1	...	1	...	...	...	...	...	2	...	...	...	1 circumcised.
...	1	...	1	...	...	...	...	...	...	2	...	...	...	Removed with scissors.
...	5	7	4	...	...	...	...	...	...	16	...	...	...	6 circumcised.
2	5	10	2	...	...	...	...	...	...	19	...	...	...	
1	...	8	15	3	...	...	...	...	...	22	4	...	1	Fatal case: cellulitis after Cock's puncture.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	4 left before cured.
1	5	6	7	1	1	...	...	...	...	14	6	...	1	
...	3	2	...	...	...	...	...	...	...	1	...	...	4	
...	1	3	1	2	...	...	...	...	...	6	1	...	...	1 periurethral, 1 communicating with urethra.
...	1	...	2	2	...	...	...	...	...	4	1	...	...	1 suprapubic cystotomy; readmission; erysipelas.
...	1	1	1	...	...	...	...	...	...	1	...	2	...	Genito-urinary tract involved in 2.
...	1	2	...	...	...	...	...	...	...	...	2	1	...	
2	1	16	16	...	...	...	...	...	...	32	...	3	...	1 double; 2 refused treatment; 1 unsuitable.
...	...	1	1	2	...	...	...	...	...	4	...	...	...	Castration and radical cure of hernia in 1.
...	...	3	4	...	...	...	...	...	...	4	2	...	1	1 readmission.
...	2	5	3	1	...	...	...	...	...	10	1	...	...	
...	...	1	1	...	...	...	...	...	...	2	...	...	...	Inguinal hernia 1.
...	...	1	1	...	...	...	...	...	...	2	...	...	...	
...	...	1	1	3	...	...	...	...	...	4	...	...	1	Fatal case: shock after nephro-lithotomy.
...	...	2	2	1	1	...	...	...	...	3	...	...	3	
...	1	...	2	...	...	...	...	...	...	3	...	...	...	Impacted.
...	3	1	3	1	...	...	...	...	...	3	2	2	1	2 refused treatment.
...	...	...	1	...	...	...	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Nephrotomy.
...	1	...	...	1	...	...	...	...	...	...	1	...	1	
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Nephrectomy 8 months previously.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Abdominal belt.
...	1	3	...	1	...	...	...	...	...	2	3	...	...	Causes undetermined.
...	1	3	...	...	...	...	...	...	...	4	...	...	...	1 ? tuberculous; amputation of breast 1.
...	5	5	...	...	...	...	...	...	...	10	...	...	...	Double in 2; 1 readmission.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	? tuberculous.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Urethra dilated.
...	...	...	2	...	...	...	...	...	...	2	...	...	...	1 into rectum.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Ring pessary.



TABLE I.—Abstract, showing Diseases, &amp;c., in Classes,

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated.
<b>GENITO-URINARY SYSTEM—</b>																		
<i>continued.</i>																		
Metrorrhagia . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Endometritis . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Fibroid of uterus . . . . .	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Pelvic hæmatocele . . . . .	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
<b>Fistulæ—</b>																		
a. Perineal . . . . .	6	...	...	...	...	1	1	3	...	1	...	1	1	...	1	1	2	...
b. Recto-urethral . . . . .	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
c. Recto-vaginal . . . . .	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
d. Vesico-vaginal . . . . .	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
e. Recto-vesico-vaginal . . . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Foreign body in urethra . . . . .	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
<b>OSSEOUS SYSTEM.</b>																		
<i>Periostitis—</i>																		
a. Humerus . . . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
b. Femur . . . . .	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
c. Os calcis . . . . .	1	1	...	...	1	...	1	...	...	...	...	...	...	...	...	1	1	...
<i>Ostitis—</i>																		
a. Femur . . . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
b. Tibia . . . . .	1	1	...	...	...	2	...	...	...	...	...	1	...	...	...	...	1	...
c. Multiple . . . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
<i>Acute necrosis—</i>																		
a. Inferior maxilla . . . . .	1	1	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...
b. Humerus . . . . .	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
c. Femur . . . . .	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
d. Tibia . . . . .	4	...	...	1	3	...	...	...	...	...	1	2	1	...	...	...	...	...
e. Fibula . . . . .	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
<i>Epiphysitis—</i>																		
a. Femur . . . . .	2	3	4	...	1	...	...	...	...	...	1	1	...	3	...	...	...	...
b. Tibia . . . . .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
<i>Caries—</i>																		
a. Rib . . . . .	...	2	...	...	1	...	...	1	...	...	...	...	1	...	...	1	...	...
b. Pelvis . . . . .	2	1	...	...	1	...	2	...	...	...	...	...	...	...	2	1	...	...
c. Humerus . . . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
d. Ulna . . . . .	1	1	1	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...
e. Metacarpus and phalanges . . . . .	2	1	...	1	1	1	...	...	...	...	...	...	1	...	...	2	...	...
f. Femur . . . . .	6	1	...	1	...	3	2	...	...	1	...	...	...	2	2	...	3	...
g. Tibia . . . . .	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...
h. Tarsus and metatarsus . . . . .	9	5	2	1	7	1	2	1	...	...	1	...	2	1	3	2	5	...

according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
1	...	...	...	...	...	...	...	...	...	1	...	...	...	Transferred to Adelaide.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Small fibroid of cervix.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Exploratory abdominal incision; punctured per vaginam.
...	1	2	3	...	...	...	...	...	...	3	2	1	...	
...	...	...	...	1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	...	1	...	Congenital; no operation.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	...	...	1	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Portion of catheter encrusted with phosphates; removed with forceps.
...	1	...	...	...	...	...	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Refused treatment.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Syphilitic.
1	...	1	...	...	...	...	...	...	...	1	1	...	...	1 trephined.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Syphilitic.
...	...	1	1	...	...	...	...	...	...	2	...	...	...	1 trephined.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Tuberculous.
...	1	1	...	...	...	...	...	...	...	1	1	...	...	
...	...	...	...	...	1	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	...	1	...	Pyæmia.
...	...	1	...	...	2	1	...	...	...	3	...	1	...	Fatal case: pyæmia.
1	...	...	...	...	...	...	...	...	...	...	...	1	...	Pyæmia.
...	1	2	1	1	...	...	...	...	...	5	...	...	...	Knee-joint involved in 1.
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Knee-joint involved.
...	1	...	1	...	...	...	...	...	...	2	...	...	...	
...	...	1	1	...	...	1	...	...	...	3	...	...	...	Two attacks of erysipelas 1.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	1	...	...	...	...	...	...	2	...	...	...	Koch's treatment 1.
...	...	1	2	...	...	...	...	...	...	3	...	...	...	„ „ 1.
1	2	1	...	3	...	...	...	...	...	3	2	...	2	Fatal cases: exhaustion 1, general tuberculosis 1.
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Koch's treatment and scraping.
...	1	4	5	3	1	...	...	...	...	9	5	...	...	1 readmission.

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic	Not stated.
<b>OSSEOUS SYSTEM—continued.</b>																		
<i>Necrosis—</i>																		
<i>a.</i> Vertex of skull . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
<i>b.</i> Inferior maxilla . . .	7	6	...	1	2	8	2	...	...	...	...	...	1	3	5	3	1	...
<i>c.</i> Scapula . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
<i>d.</i> Rib . . .	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...
<i>e.</i> Costal cartilage . . .	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
<i>f.</i> Ilium . . .	3	2	3	...	1	1	...	...	...	...	...	1	...	2	2	...	...	...
<i>g.</i> Humerus . . .	2	1	...	...	1	1	1	...	...	...	...	...	...	...	1	...	2	...
<i>h.</i> Ulna . . .	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
<i>i.</i> Patella . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
<i>j.</i> Femur . . .	7	3	...	2	4	2	...	...	1	1	...	...	...	2	2	1	5	...
<i>k.</i> Tibia . . .	6	1	...	...	1	1	2	1	1	1	...	...	1	1	...	...	5	...
<i>l.</i> Fibula . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
<i>m.</i> Phalanges . . .	2	...	...	...	...	...	1	...	1	...	...	...	...	...	...	1	1	...
<i>n.</i> Multiple . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Abscess of tibia . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Softening of rickety femur after osteotomy . . .	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	1	...
<b>MASTOID AND MIDDLE EAR.</b>																		
Otitis media . . .	3	5	1	...	4	2	1	...	...	...	1	...	...	2	...	2	3	...
Caries of mastoid . . .	6	4	1	3	3	1	2	...	...	...	1	...	1	2	...	1	5	...
<b>DISEASES OF JOINTS.</b>																		
<i>Arthritis—</i>																		
<i>a.</i> Shoulder . . .	2	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...
<i>b.</i> Elbow . . .	2	5	1	2	2	1	...	1	...	...	...	...	...	1	...	...	6	...
<i>c.</i> Wrist . . .	5	2	...	...	2	2	1	1	...	1	...	...	1	2	2	...	2	...
<i>d.</i> Hip . . .	40	19	15	19	13	10	2	...	...	...	...	4	4	3	7	12	28	1
<i>e.</i> Knee . . .	23	11	6	5	6	10	3	4	...	...	...	2	...	3	1	7	20	1
<i>f.</i> Ankle . . .	7	4	...	2	2	3	2	1	...	1	...	...	...	...	4	2	5	...
<i>Chronic rheum. arthritis—</i>																		
<i>a.</i> Multiple . . .	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
<i>b.</i> Hip . . .	5	1	...	...	2	...	...	...	2	2	...	...	...	...	2	...	4	...
<i>c.</i> Knee . . .	2	...	...	...	...	...	...	1	1	...	...	...	...	...	1	...	1	...
Sacro-iliac disease . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Int. derangement of knee Ankylosis—	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
<i>a.</i> Hip . . .	3	1	...	...	4	...	...	...	...	...	...	...	...	...	...	...	4	...
<i>b.</i> Knee . . .	6	1	1	1	4	1	...	...	...	...	...	...	...	...	...	1	6	...
<i>c.</i> Elbow . . .	2	...	...	...	1	...	...	1	...	...	...	...	...	...	...	1	1	...
Hysterical hip . . .	...	2	...	...	1	1	...	...	...	...	...	...	...	...	1	1	...	...

according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys.	Dys.	Wks	Mts.	Mts.	Mts.	Mts.	Mts.	Mts.	Mts.	C.	R.	U.	D.	
1-4	5-13	2-4	1-2	2-4	4-6	6-9	9-12	+12						
1	...	...	...	...	...	...	...	...	...	...	1	...	...	Syphilitic. Refused treatment.
1	7	5	...	...	...	...	...	...	...	7	4	1	1	Fatal case: ? septicæmia. 1 readmission.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	2	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	2	2	...	...	...	...	...	...	3	1	...	1	Fatal case: exhaustion. 2 readmissions.
...	1	2	...	...	...	...	...	...	...	3	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Old fracture; wired.
1	2	1	3	1	...	1	1	...	...	6	4	...	...	2 readmissions.
...	...	1	3	3	...	...	...	...	...	5	2	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	...	1	...	...	...	...	...	...	2	...	...	...	
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Malar, femur, and both tibiæ.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Trephined.
...	...	1	...	1	...	...	...	...	...	1	1	...	...	Same case, readmitted.
...	6	1	...	1	...	...	...	...	...	8	...	...	...	1 double; thrombosis and suppuration in lateral sinus 1, trephined, &c. Readmission 1.
2	3	2	2	1	...	...	...	...	...	7	2	...	1	Trephining 4, scraping 4. Fatal case: suppuration round lateral sinus, meningitis, &c. Re-admission 1.
...	...	...	...	1	...	1	...	...	...	1	1	...	...	Early hip disease 1.
...	1	1	3	1	...	1	...	...	...	5	2	...	...	1 readmission. Koch's treatment 1.
...	2	...	2	2	...	1	...	...	...	6	...	1	...	1 refused treatment. Caries of spine 1.
...	9	8	16	15	7	3	1	...	...	24	31	2	2	6 readmitted.
...	5	3	13	10	1	2	...	...	...	20	9	4	1	7 readmitted. Koch's treatment 5.
...	2	2	2	2	3	...	...	...	...	7	4	...	...	Koch's treatment 1.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Transferred to medical ward.
...	1	1	2	2	...	...	...	...	...	6	...	...	...	Double in 3; partial dislocation of hips 1.
...	1	...	1	...	...	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	2	...	1	...	...	...	3	1	...	...	Double in 1. Refused operation 1.
...	1	...	3	2	...	1	...	...	...	6	1	...	...	1 readmission.
...	...	...	2	...	...	...	...	...	...	2	...	...	...	
...	...	1	1	...	...	...	...	...	...	1	1	...	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.										Duration before admission.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic	Not stated.			
DISEASES OF JOINTS—con- tinued.																					
Hysterical knee . . .	...	2	...	...	...	1	...	...	...	1	...	...	...	...	...	2	...	...			
Synovitis of knee . . .	...	4	...	1	1	2	...	...	...	...	1	1	1	1	...	...	...	...			
Gonorrhœal rheumatism—																					
<i>a.</i> Knee . . .	1	...	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	...			
<i>b.</i> Wrist . . .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...			
Hæmarthrosis—																					
<i>a.</i> Knee . . .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...			
<i>b.</i> Knee and elbow . . .	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...			
Acute suppurative arthritis																					
<i>a.</i> Knee . . .	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...			
<i>b.</i> Ankle . . .	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...			
Old excision of hip . . .	3	2	...	3	2	...	...	...	...	...	...	...	...	...	...	3	2	...			
Do. knee . . .	1	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...			
Do. shoulder . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...			
Old arthrectomy of knee . . .	3	1	...	...	3	1	...	...	...	...	...	...	...	...	1	...	3	...			
Do. ankle . . .	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...			
DISEASES OF SPINE.																					
Cervical . . .	1	2	1	1	...	...	...	1	...	...	...	...	...	...	2	1	...	...			
Dorsal . . .	10	2	2	5	2	...	3	...	...	...	...	...	...	1	1	1	9	...			
Lumbar . . .	7	4	1	3	2	1	4	...	...	...	...	...	...	1	2	2	6	...			
Hysterical spine . . .	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...			
Lateral curvature . . .	1	1	1	...	1	...	...	...	...	...	...	...	...	...	...	1	1	...			
APPENDAGES TO MUSCULAR SYSTEM.																					
Gummatous myositis . . .	2	...	...	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...			
Hernia of muscle . . .	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...			
Tenosynovitis . . .	1	1	...	...	...	2	...	...	...	...	...	...	...	1	...	...	1	...			
Matting of wrist tendons . . .	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...			
Ganglion . . .	2	5	...	...	1	3	1	...	...	2	...	...	...	...	1	...	6	...			
Enlarged patella bursa . . .	...	10	...	...	1	9	...	...	...	...	...	...	...	1	5	1	3	...			
Suppurating patella bursa . . .	6	11	...	1	7	6	1	...	1	1	5	6	5	1	...	...	...	...			
Varicus bursæ . . .	6	1	2	...	...	1	2	1	...	1	...	...	...	1	2	1	3	...			
DEFORMITIES.																					
Deformity of nose . . .	...	2	...	...	...	2	...	...	...	...	...	...	...	...	...	1	1	...			
Perforation of palate . . .	...	2	...	...	...	...	2	...	...	...	...	...	...	...	...	1	1	...			
Torticollis . . .	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...			



according to authorised *Nomenclature*—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	1	...	...	1	...	...	...	...		2	...	...	...	Double in 1; ? syphilitic.
...	3	1	...	...	...	...	...	...		3	1	...	...	
...	1	...	...	...	...	...	...	...		1	...	...	...	Hæmophilia.
...	...	...	1	...	...	...	...	...		1	...	...	...	
...	...	1	...	...	...	...	...	...		1	...	...	...	Following epiphysitis of femur.
...	...	...	1	...	...	...	...	...		1	...	...	...	
...	1	3	1	...	...	...	...	...		1	...	...	...	Fatal case: erysipelas and diphtheria.
...	...	1	1	...	...	...	...	...		2	...	...	...	
...	...	...	1	...	...	...	...	...		1	...	...	...	Erysipelas. Koch's treatment 1; psoas abscess developed.
...	1	1	...	...	2	...	...	...		3	1	...	...	
...	...	...	1	...	...	...	...	...		1	...	...	...	Post-pharyngeal abscess in 1. Psoas abscess 7. Dorsal 1, iliac 1, lumbar 1. Psoas abscess 7. Lumbar 4. Commencing para- plegia 1.
...	1	1	1	...	...	...	...	...		3	...	...	...	
...	1	1	3	5	1	1	...	...		11	...	1	...	Sterno-mastoid 1, both calves 1. Following injury. Ankle 1, wrist 1. Old Collis. Died under chloroform. Wrist 3, ankle 2, finger 1. 1 readmission.
2	1	...	1	3	1	1	...	2		7	1	3	...	
...	...	2	...	...	...	...	...	...		2	...	...	...	Fatal case: diabetic coma.
...	...	2	...	...	...	...	...	...		2	...	...	...	
...	...	2	...	...	...	...	...	...		2	...	...	...	Plastic operations. Syphilitic. Plastic operations. Myotomy sterno-mastoid 1.
...	...	2	...	...	...	...	...	...		2	...	...	...	
...	...	1	...	1	...	...	...	...		1	1	...	...	Plastic operations. Syphilitic. Plastic operations. Myotomy sterno-mastoid 1.
...	...	2	...	...	...	...	...	...		1	1	...	...	
...	1	...	1	...	...	...	...	...		1	1	...	...	Plastic operations. Syphilitic. Plastic operations. Myotomy sterno-mastoid 1.
...	...	1	...	...	...	...	...	...		1	1	...	...	



according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
2	1	2	3	...	...	...	...	...	6	2	...	...	...	1 ? hysterical, readmitted 3 times; 1 double.
1	4	1	...	1	1	...	...	...	7	1	...	...	...	3 readmissions. 1 double.
...	...	1	...	...	1	...	...	...	1	...	...	...	...	Slight equino-varus opposite foot.
...	...	...	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	...	2	...	1	...	...	2	1	...	...	...	Cured spina bifida and paraplegia in 1.
2	1	...	...	...	...	...	...	...	1	2	...	...	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	...	Double.
...	...	...	2	...	...	...	...	...	2	...	...	...	...	1 double.
...	...	...	...	...	1	...	...	...	1	...	...	...	...	
...	...	3	...	...	...	...	...	...	3	...	...	...	...	1 symmetrical.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Extensor tendon, 5th toe.
...	1	1	1	...	...	...	...	...	3	...	...	...	...	2 symmetrical.
...	...	1	2	2	1	...	...	...	5	1	...	...	...	Double 3.
...	...	2	...	...	...	...	...	...	...	2	...	...	...	
...	1	...	...	1	...	...	...	...	...	1	...	...	1	Fatal case: prematurity.
...	...	1	...	...	1	...	...	...	...	1	1	...	...	Both double.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	Refracture.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	"
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Old arthrectomy.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Old dislocation of metatarsus.
...	1	1	1	...	...	...	...	...	3	...	...	...	...	
...	1	3	2	3	...	...	...	...	7	2	...	...	...	Infantile paralysis 3; rheumatism 1; functional 1;
...	...	...	...	...	...	...	...	...	...	...	...	...	...	disease 1; pop. abscess 1; cellulitis 1; ? cause 1.
...	2	...	1	...	...	...	...	...	3	...	...	...	...	Thigh 1, leg 1, arm 1.
...	1	...	1	...	...	...	...	...	1	1	...	...	...	Same case readmitted.
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Machine accident.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Result of burn.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Result of old ulceration of thigh.
...	2	1	1	...	...	...	...	...	2	1	...	...	...	
...	4	4	3	1	...	...	...	...	4	2	4	2	...	Right 1, left 3.
...	...	...	1	1	...	...	...	...	1	...	...	1	...	Right 3, left 9.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	
...	1	2	3	1	...	...	...	...	5	1	1	...	...	Scarlet fever.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Small perforation in hard palate.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Scarlet fever.
...	...	...	...	1	...	...	...	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	? congenital dislocation.
1	...	...	...	...	...	...	...	...	...	1	...	...	...	Lower extremities of femora rudimentary.

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not stated.
<b>MALFORMATIONS—continued.</b>																		
Undescended testicle . . .	4	...	...	1	2	1	...	...	...	...	...	...	...	...	...	...	4	...
Extroversion of bladder . .	2	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...
Imperforate anus . . .	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
"    rectum . . .	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...
Spina bifida . . .	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...
"    "    occulta . . .	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Congenital faecal fistula at umbilicus . . .	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
<b>SKIN AND CELLULAR TISSUE.</b>																		
Sinus . . .	7	5	...	...	6	4	2	...	...	...	...	1	...	2	1	2	6	...
Abscess—																		
<i>a.</i> Face . . .	2	1	...	1	...	1	1	...	...	...	...	1	1	...	1	...	...	...
<i>b.</i> Neck . . .	2	4	1	1	...	3	1	...	...	...	1	1	4	...	...	...	...	...
<i>c.</i> Arm . . .	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
<i>d.</i> Hand . . .	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
<i>e.</i> Finger . . .	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
<i>f.</i> Axillary . . .	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...
<i>g.</i> Chest . . .	3	1	...	...	2	...	...	2	...	...	...	1	...	1	1	1	...	...
<i>h.</i> Gluteal . . .	3	1	...	...	...	1	...	1	2	...	...	1	1	...	...	1	...	...
<i>i.</i> Pelvic . . .	3	2	...	1	1	2	...	...	1	...	...	...	1	1	1	1	1	...
<i>j.</i> Lumbar . . .	3	2	...	...	2	...	...	1	...	...	...	...	1	...	2	1	1	...
<i>k.</i> Ischio-rectal . . .	9	1	1	1	...	1	3	1	2	1	1	4	3	...	...	2	...	...
<i>l.</i> Scrotum . . .	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
<i>m.</i> Groin . . .	2	1	...	...	2	...	1	...	...	...	...	1	1	1	...	...	...	...
<i>n.</i> Thigh . . .	7	3	...	3	1	4	1	1	...	...	...	1	1	6	1	...	1	...
<i>o.</i> Popliteal . . .	1	3	...	...	4	...	...	...	...	...	1	...	2	1	...	...	...	...
<i>p.</i> Leg . . .	3	3	1	2	2	...	...	...	1	...	...	1	1	1	3	...	...	...
<i>q.</i> Foot . . .	3	...	...	...	1	1	...	...	...	1	...	2	...	...	...	...	...	1
<i>r.</i> Multiple . . .	1	2	2	...	...	1	...	...	...	...	...	...	2	1	...	...	...	...
<b>Cellulitis—</b>																		
<i>a.</i> Face . . .	7	2	1	2	3	2	...	1	...	...	8	...	...	...	...	...	...	1
<i>b.</i> Submaxillary . . .	2	1	...	...	...	1	2	...	...	...	...	1	1	1	...	...	...	...
<i>c.</i> Scalp . . .	1	1	...	...	...	...	...	2	...	...	...	1	1	...	...	...	...	...
<i>d.</i> Abdominal wall . . .	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
<i>e.</i> External genitals . . .	3	...	2	...	...	...	1	...	...	...	2	...	1	...	...	...	...	...
<i>f.</i> Upper extremity . . .	19	5	1	...	2	6	6	5	2	2	7	13	...	1	...	...	...	3
<i>g.</i> Lower extremity . . .	9	8	...	...	7	2	4	1	2	1	5	6	6	...	...	...	...	...
<i>h.</i> Buttock . . .	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...

according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	1	1	2	...	...	...	...	...	2	2	...	...	...	Double 1.
...	...	...	1	...	...	...	...	1	1	...	1	...	...	Erysipelas 1.
1	...	...	...	...	...	...	...	...	...	...	...	...	1	Communication between rectum and urethra.
1	3	...	...	...	...	...	...	...	1	...	...	3	...	
1	2	...	...	1	...	...	...	...	...	...	3	1	...	Lumbo-sacral 2, lumbar 1, sacral 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Perforating ulcer of foot.
...	2	...	...	...	...	...	...	...	...	...	1	1	...	Patent Meckel's diverticulum 1.
2	4	2	2	1	1	...	...	...	8	3	1	...	...	
...	2	1	...	...	...	...	...	...	3	...	...	...	...	
1	3	1	1	...	...	...	...	...	6	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Whitlow.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Subject of atrophic scirrhus of breast.
...	...	2	2	...	...	...	...	...	4	...	...	...	...	
...	1	2	1	...	...	...	...	...	3	1	...	...	...	
...	...	3	...	...	1	1	...	...	5	...	...	...	...	
...	...	2	1	...	1	1	...	...	4	1	...	...	...	
...	3	2	4	1	...	...	...	...	10	...	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	...	
1	1	1	...	...	...	...	...	...	3	...	...	...	...	
...	...	4	4	2	...	...	...	...	10	...	...	...	...	
...	...	2	1	1	...	...	...	...	4	...	...	...	...	
...	1	5	...	...	...	...	...	...	6	...	...	...	...	
...	...	2	1	...	...	...	...	...	2	1	...	...	...	
...	1	...	2	...	...	...	...	...	1	...	...	2	...	Erysipelas 1.
2	5	2	...	...	...	...	...	...	8	...	...	1	...	Pyæmia.
...	...	2	1	...	...	...	...	...	3	...	...	...	...	Tracheotomy 1.
...	1	...	1	...	...	...	...	...	2	...	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	...	Simulated perityphlitis.
...	1	...	1	1	...	...	...	...	3	...	...	...	...	Scrotum 1, penis 1, both 1.
1	9	9	4	1	...	...	...	...	2+	...	...	...	...	Forearm and arm 6, arm 1, forearm 1, elbow 3, hand 9, digits 2, forearm and hand 2.
...	8	2	4	2	...	1	...	...	14	1	...	2	...	Thigh and leg 2, leg 6, leg and foot 4, knee 2, foot 3.
...	...	...	...	1	...	...	...	...	1	...	...	...	...	





according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	...	1	...	...	...	...	...	...	1	...	...	...	? tuberculous.
...	...	1	...	...	...	...	...	...	1	...	...	...	? syphilitic.
...	...	...	1	...	...	...	...	...	1	...	...	...	Skin over umbilical hernia.
...	2	3	4	2	...	...	...	...	10	1	...	...	Syphilitic 4, varicose 3, tuberculous 1, simple 3.
...	...	1	1	...	...	...	...	...	1	...	1	...	Fatal from pneumonia.
...	...	1	...	...	...	...	...	...	1	...	...	...	Inter-phalangeal joint opened.
...	...	...	1	1	...	...	...	...	2	...	...	...	Syphilitic 1, ? cause 1.
...	...	...	1	...	...	...	...	...	1	...	...	...	Over great trochanter.
...	2	1	2	...	...	...	...	...	3	...	2	...	Erysipelas 1.
3	2	4	5	4	1	...	...	...	17	2	...	...	4 readmissions. Koch's treatment 3.
...	...	...	...	...	1	...	...	...	...	...	1	...	Koch's treatment.
1	...	2	4	...	...	...	...	...	7	...	...	...	Face and neck 3, hands and forearms 1, leg 3 (double 1).
...	1	...	...	...	...	...	...	...	...	...	1	...	Transferred to medical ward.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	...	...	1	...	Koch's treatment.
...	...	1	...	1	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	Extensive of trunk, face, &c.
1	1	...	...	...	...	...	...	...	...	...	...	2	
...	2	...	...	...	...	...	...	...	...	...	...	2	
...	...	...	1	...	...	...	...	...	...	...	...	1	Fatal from chronic pyæmia.
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	...	1	History of injury to head.
...	1	...	...	...	...	...	...	...	...	...	1	...	Transferred to medical ward.
...	1	...	...	...	...	...	...	...	1	...	...	...	History of injury, for which admitted.
2	...	...	...	...	...	...	...	...	...	...	2	...	Transferred to medical ward.
...	1	1	...	...	...	...	...	...	2	...	...	...	Admitted for supposed injury.
1	...	...	...	...	...	...	...	...	...	...	1	...	Transferred to medical ward.
2	...	...	...	...	...	...	...	...	...	1	...	1	Fatal case from starvation.
...	...	1	...	...	...	...	...	...	1	...	...	...	Admitted for supposed tumour.
1	...	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	First bicuspid.
...	...	1	1	...	...	...	...	...	2	...	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	
									1128	261	113	101	
									1603				

TABLE II.—Abstract showing Injuries, &amp;c., in

INJURIES.	Sex.		Age.									Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported	
GENERAL INJURIES.																		
Shock . . . . .	...	3	1	2	...	...	...	...	...	...	3	...	...	...	...	...	...	
Burns . . . . .	22	19	18	6	7	4	1	3	2	...	29	2	3	2	...	2	3	
Scalds . . . . .	24	10	34	3	2	...	2	...	...	...	29	...	3	4	2	3	...	
Snake bite . . . . .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
LOCAL INJURIES.																		
Scalp wounds . . . . .	15	7	1	4	4	4	2	1	3	3	16	1	2	...	...	3	...	
Traumatic aneurysm tem- poral artery . . . . .	...	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	
Concussion . . . . .	61	11	13	11	17	9	14	6	...	3	64	1	3	1	2	1	...	
Cerebral irritation . . . . .	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
Fractures of vault of skull																		
<i>a.</i> Simple depressed . . . . .	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
<i>b.</i> Compound . . . . .	3	...	...	...	2	...	1	...	...	...	3	...	...	...	...	...	...	
<i>c.</i> Compound depressed . . . . .	4	2	...	1	...	1	1	1	1	1	6	...	...	...	...	...	...	
Fractures of base . . . . .	14	2	...	1	1	...	3	4	5	2	16	...	...	...	...	...	...	
Doubtful do. . . . .	1	1	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...	
Punctured fracture of skull . . . . .	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Bullet wounds of skull . . . . .	2	...	...	...	...	1	...	...	1	...	2	...	...	...	...	...	...	
Contusion of face . . . . .	2	1	...	...	...	1	1	...	...	1	2	...	...	1	...	...	...	
Wound of face . . . . .	1	1	...	2	...	...	...	...	...	...	2	...	...	...	...	...	...	
Wound of tongue . . . . .	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	
Comp. fract. nasal bones . . . . .	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	
" sup. maxilla . . . . .	2	1	...	1	...	1	...	1	...	...	3	...	...	...	...	...	...	
" inf. maxilla . . . . .	3	...	...	...	...	...	3	...	...	...	...	...	1	1	...	1	...	
Injury to eye and face . . . . .	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Punctured wound of eye- ball . . . . .	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	
Gunshot wound of eyeball . . . . .	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Ruptured globe . . . . .	3	...	...	...	1	1	...	1	...	...	3	...	...	...	...	...	...	
<i>Injuries to neck—</i>																		
Strain . . . . .	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	
Incised wounds . . . . .	8	1	...	...	1	3	1	2	...	2	5	4	...	...	...	...	...	
Foreign body in larynx . . . . .	...	2	1	1	...	...	...	...	...	...	2	...	...	...	...	...	...	
<i>Injuries to chest—</i>																		
Contusion . . . . .	3	...	...	...	1	2	...	...	...	...	3	...	...	...	...	...	...	
Wound . . . . .	1	1	...	...	...	...	1	1	...	...	2	...	...	...	...	...	...	
Fractured ribs . . . . .	16	2	1	1	1	2	2	5	5	1	15	...	2	...	1	...	...	
" sternum . . . . .	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	

*Classes, according to authorised Nomenclature.*

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
2	1	...	...	...	...	...	...	...	3	...	...	...	Adder.
19	5	6	6	5	...	...	...	...	22	1	...	18	
18	9	8	5	...	...	1	...	...	25	...	...	9	
...	1	...	...	...	...	...	...	...	1	...	...	...	
7	10	4	...	1	...	...	...	...	20	...	...	2	Fatal cases: tetanus 1, thrombosis pulmo- nary artery 1. 1 readmitted for hæmor- rhage.
1	...	...	...	...	...	...	...	...	1	...	...	...	Scalp wound a few days previously.
26	33	10	2	1	...	...	...	...	71	...	...	1	Fatal case: ruptured liver.
...	...	1	...	...	...	...	...	...	1	...	...	...	Suppurating hæmatoma of scalp; opened.
1	...	...	...	...	...	...	...	...	...	...	...	1	1 died in casualty room; 1 transferred to medical ward.
1	1	1	...	...	...	...	...	...	2	...	...	1	
3	1	1	1	...	...	...	...	...	2	...	...	4	
10	...	5	1	...	...	...	...	...	5	...	1	10	
...	1	1	...	...	...	...	...	...	2	...	...	...	Fall on peg-top; trephined.
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	...	1	...	...	...	...	...	...	1	...	...	1	
...	3	...	...	...	...	...	...	...	3	...	...	...	
...	2	...	...	...	...	...	...	...	2	...	...	...	Admitted for hæmorrhage.
...	1	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	1	...	
...	1	1	...	1	...	...	...	...	3	...	...	...	
1	1	1	...	...	...	...	...	...	3	...	...	...	1 double, with fracture; ribs and nasal bones also.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Blank cartridge discharged in face. Excision.
...	3	...	...	...	...	...	...	...	3	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	Excision. All excised.
2	3	4	...	...	...	...	...	...	6	...	...	3	
2	...	...	...	...	...	...	...	...	2	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	
2	1	...	...	...	...	...	...	...	3	...	...	...	Fatal cases: hæmorrhage 2, exhaustion 1.
1	...	1	...	...	...	...	...	...	2	...	...	...	
3	5	8	2	...	...	...	...	...	18	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	Non-penetrating.
...	...	...	...	...	...	...	...	...	...	...	...	...	Tetanus in 1, due to wound of fifth finger.
...	...	...	...	...	...	...	...	...	...	...	...	...	Gladiolus, between third and fourth ribs.

TABLE II.—Abstract showing Injuries, &amp;c., in

INJURIES.	Sex.		Age.									Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported	
LOCAL INJURIES—continued																		
<i>Injuries to back—</i>																		
Contusions . . .	11	2	1	3	1	4	1	...	1	2	10	...	1	...	2	...	...	
<i>Injuries to spine—</i>																		
Concussion . . .	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	
Fracture . . .	5	...	...	...	...	1	...	...	3	1	5	...	...	...	...	...	...	
Doubtful fracture	3	...	...	...	...	...	...	...	1	2	1	...	...	...	...	2	...	
„ injury . . .	3	...	...	...	...	1	...	...	2	...	...	...	...	...	...	3	...	
<i>Injuries to abdomen—</i>																		
Contusions . . .	21	5	3	5	7	7	1	2	...	1	24	...	1	1	...	...	...	
Punctured wound	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Rupture of ilium .	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	
„ of colon . . .	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
„ of liver . . .	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	
Injury to kidney .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Foreign body in alimentary canal	1	2	1	2	...	...	...	...	...	...	2	...	...	1	...	...	...	
<i>Injuries to pelvis—</i>																		
Contusion . . .	1	1	1	...	1	...	...	...	...	...	2	...	...	...	...	...	...	
Wound of perineum	1	1	...	2	...	...	...	...	...	...	2	...	...	...	...	...	...	
„ of vagina . . .	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	
„ of penis . . .	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	
Hæmatoma of scrotum and penis	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Hæmatoma of labium .	...	4	...	...	1	1	1	1	...	...	2	2	...	...	...	...	...	
Hæmatoma of pelvis and groin	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Acute traumatic hydrocele	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Traumatic hæmatocele	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Rupture of urethra .	3	...	...	...	...	...	1	2	...	...	3	...	...	...	...	...	...	
Fracture of pelvis .	2	1	...	1	...	...	1	...	...	1	3	...	...	...	...	...	...	
Separation of symphysis, pubis, and left sacro-iliac joint	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
<i>Injuries to upper extremity—</i>																		
Wound of forearm .	8	1	1	...	2	3	2	1	...	...	5	1	1	2	...	...	...	
„ of hand . . .	6	1	1	...	1	2	2	...	1	...	6	...	...	...	1	...	...	
Bullet wound of hand .	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	
Dislocation of humerus																		
a. Subcoracoid . .	5	1	...	...	...	1	...	1	4	...	...	...	...	...	...	6	...	
b. Subglenoid . . .	2	1	...	...	...	...	...	1	1	1	...	...	...	1	1	1	...	



## Classes, according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
8	4	1	...	...	...	...	...	...	13	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
4	...	...	...	...	1	...	...	...	...	...	1	4	Cervical 3, dorsal 1.
...	2	...	1	...	...	...	...	...	2	1	...	...	
...	1	1	1	...	...	...	...	...	...	...	3	...	Readmission 1; malingering 1.
15	10	1	...	...	...	...	...	...	26	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Prolapse of great omentum.
1	...	...	...	...	...	...	...	...	...	...	...	1	Buffer accident. No operation.
1	...	...	...	...	...	...	...	...	...	...	...	1	Suture of rupture. Fatal from collapse.
1	...	...	...	...	...	...	...	...	...	...	...	1	
...	...	1	...	...	...	...	...	...	1	...	...	...	Hæmaturia following kick.
1	2	...	...	...	...	...	...	...	3	...	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	
...	2	...	...	...	...	...	...	...	2	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	3	...	...	...	...	...	...	...	4	...	...	...	
...	...	...	...	...	1	...	...	...	1	...	...	...	Gangrene of foot. Amputation of leg.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	2	...	...	...	...	...	...	3	...	...	...	For one other see Fractured pelvis.
3	...	...	...	...	...	...	...	...	...	...	...	3	For one other see Ruptured bladder.
...	...	...	1	...	...	...	...	...	1	...	...	...	
2	1	5	...	1	...	...	...	...	9	...	...	...	
1	...	3	2	1	...	...	...	...	7	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
2	3	1	...	...	...	...	...	...	3	1	2	...	1 refused treatment.
...	3	...	...	...	...	...	...	...	2	1	...	...	1    "    "

TABLE II.—*Abstract showing Injuries, &c., in*

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported
<i>LOCAL INJURIES—continued</i>																	
<i>Injuries to upper extremity—</i>																	
Compound dislocation of hand	3	...	...	...	...	...	1	1	1	...	2	1	...	...	...	...	...
Old dislocation of elbow and fracture external condyle of humerus	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Fracture of scapula	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Do., of clavicle	2	...	1	...	...	...	...	...	1	...	1	...	1	...	...	...	...
Do., comminuted	1	...	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...
Fracture of humerus	4	1	...	...	2	2	...	...	...	1	4	...	1	...	...	...	...
Do., comminuted	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...
Do., compound	3	...	...	...	...	...	...	1	1	1	3	...	...	...	...	...	...
Do., comp. comminuted	2	1	...	...	1	...	1	1	...	...	3	...	...	...	...	...	...
Separation lower epiphysis	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Fracture of radius and ulna	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Do., compound	4	...	...	...	1	1	1	1	...	...	3	...	...	...	1	...	...
Fracture of ulna	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Do., compound	2	...	...	...	2	...	...	...	...	...	2	...	...	...	...	...	...
Fracture of olecranon	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Do., compound	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Fracture of hand	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Do., compound	11	1	...	...	5	1	3	1	2	...	9	1	...	...	...	2	...
Fracture of scapula, clavicle, humerus, and ribs	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Refracture of humerus	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Ununited fracture of humerus	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Old fracture of olecranon	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
<i>Injuries to lower extremity—</i>																	
Contusion of buttock	3	3	...	1	...	1	3	1	...	...	2	...	1	2	...	...	1
Do., of leg	1	1	...	...	...	1	...	...	1	...	1	...	...	...	1	...	...
Hæmatoma of buttock	1	1	...	...	...	...	...	2	...	...	...	...	...	...	...	...	2
Do., of knee	2	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	1
Rupture of sartorius	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Do., of add. magnus	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Wound of buttock	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Do., of thigh	7	...	1	...	1	2	1	1	...	1	7	...	...	...	...	...	...
Do., of knee	10	1	1	2	3	2	3	...	...	...	7	...	...	1	1	2	...
Do., of leg	4	...	...	...	1	1	...	2	...	...	3	...	...	1	...	...	...
Do., of foot	3	2	...	...	3	...	2	...	...	...	5	...	...	...	...	...	...

*Classes, according to authorised Nomenclature—continued.*

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
1	1	1	...	...	...	...	...	...	3	...	...	...	Amputation forearm 1.
...	...	...	...	...	...	1	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
1	1	...	...	...	...	...	...	...	1	...	...	1	Fatal case from delirium tremens.
...	1	...	...	...	...	...	...	...	1	...	...	...	
1	2	1	...	1	...	...	...	...	5	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	2	1	...	...	...	...	...	3	...	...	...	For one other case see Fracture of femur.
...	1	...	2	...	...	...	...	...	3	...	...	...	All into elbow-joint.
...	...	1	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	1	2	1	...	...	...	...	...	4	...	...	...	Erysipelas 1 case.
...	1	...	...	...	...	...	...	...	...	1	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Wired.
...	...	1	...	...	...	...	...	...	1	...	...	...	Wired.
...	...	1	...	...	...	...	...	...	1	...	...	...	Amputation of forearm.
...	5	6	1	...	...	...	...	...	12	...	...	...	1 readmission.
1	...	...	...	...	...	...	...	...	...	...	...	1	Shock.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	...	1	...	...	1	...	...	...	
...	...	...	...	...	1	...	...	...	...	1	...	...	
2	1	2	1	...	...	...	...	...	6	...	...	...	
...	...	1	...	1	...	...	...	...	2	...	...	...	Amputation thigh for gangrene of leg in 1.
...	...	2	...	...	...	...	...	...	1	1	...	...	
...	1	1	...	...	...	...	...	...	2	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Secondary hæmorrhage.
1	3	1	2	...	...	...	...	...	7	...	...	...	Gunshot 1.
2	5	4	...	...	...	...	...	...	11	...	...	...	1 readmitted.
...	1	...	1	1	1	...	...	...	4	...	...	...	Gunshot 1 (erysipelas).
...	1	3	1	...	...	...	...	...	5	...	...	...	Amputation leg 1.



according to authorised Nomenclature—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
1	...	...	...	...	...	...	...	...		1	...	...	...	Dorsal.
...	...	1	...	...	...	...	...	...		1	...	...	...	With fracture of neck of bone.
...	1	...	...	...	...	...	...	...		1	...	...	...	Admitted for supposed recent injury.
...	3	5	10	1	...	...	...	...		16	...	...	3	Fatal cases: collapse 2, broncho-pneumonia 1.
2	5	19	37	7	...	...	...	...		68	1	...	1	Fatal case: pneumonia. 1 T-shaped fracture into knee-joint.
...	...	...	1	...	...	...	...	...		1	...	...	...	
2	...	...	1	...	...	...	...	...		...	...	...	3	1 double into knee-joints; simple fracture of femur in 1.
...	...	...	1	...	...	...	...	...		...	1	...	...	Readmission; angular deformity.
...	2	7	7	1	...	...	...	...		15	1	...	1	Fatal case from intestinal obstruction.
...	...	...	1	...	...	...	...	...		1	...	...	...	
...	...	...	1	...	...	...	...	...		1	...	...	...	18 months duration; wired.
2	20	77	17	3	...	...	...	...		118	...	...	1	Fatal case after operation for umbilical hernia. Erysipelas 2; double 1.
...	...	1	7	3	2	1	...	...		13	...	...	1	Fatal case: ? septicæmia.
2	...	...	4	...	...	...	...	...		4	...	...	2	For one other case see Fracture of femur.
...	...	...	1	...	...	...	...	...		...	1	...	...	Fatal cases: traumatic delirium 1, shock 1.
...	...	...	...	...	...	...	...	...		...	...	...	...	Admitted for new splint.
8	21	15	4	...	...	...	...	...		48	...	...	...	For one other case see Compound comminuted fracture of femur.
...	...	...	1	...	...	...	...	...		1	...	...	...	
...	...	...	1	...	...	...	...	...		1	...	...	...	
4	11	5	...	...	...	...	...	...		20	...	...	...	
...	...	2	...	...	...	...	...	...		2	...	...	...	
...	1	2	1	1	...	...	...	...		5	...	...	...	Metatarsus 1, phalanges 4.
1	1	...	...	...	...	...	...	...		2	...	...	...	1 double.
...	...	1	...	...	...	...	...	...		1	...	...	...	
1	1	...	...	...	...	...	...	...		2	...	...	...	
...	5	4	2	...	...	...	...	...		10	1	...	...	
...	...	2	...	...	...	...	...	...		2	...	...	...	Suppurative arthritis in 1.
1	...	...	...	...	...	...	...	...		1	...	...	...	Extreme collapse.
...	...	...	...	...	...	...	...	...		714	13	8	74	
...	...	...	...	...	...	...	...	...		1128	261	113	101	
										1842	274	121	175	
										2412				



TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
REMOVAL OF TUMOURS AND NEW GROWTHS.										
Amputation of breast . . . . .	...	7	...	...	...	...	1	3	1	2
Ditto with removal of glands . . . . .	...	20	...	...	...	...	2	9	4	5
Removal of recurrent growth . . . . .	...	16	...	...	...	...	3	7	3	3
Carcinoma of palate . . . . .	...	1	...	...	...	1	...	...	...	...
" of bladder . . . . .	...	1	...	...	...	...	...	...	...	1
" of rectum . . . . .	...	1	...	...	...	...	...	...	1	...
Epithelioma of lip . . . . .	...	2	...	...	...	...	...	1	...	1
" of cheek . . . . .	...	1	...	...	...	...	...	1	...	...
" of neck . . . . .	...	1	...	...	...	...	...	...	1	...
" tongue . . . . .	...	8	...	...	...	...	1	4	2	1
Do., recurrent . . . . .	...	1	...	...	...	...	...	...	1	...
Recurrent epithelioma of face . . . . .	...	1	...	...	...	...	...	...	...	1
Epithelioma of glands of neck . . . . .	...	2	...	...	...	...	...	1	...	1
Rodent ulcer, forehead . . . . .	...	1	...	...	...	...	1	...	...	...
Do., recurrent of face . . . . .	...	1	...	...	...	...	...	1	...	...
Sarcoma of superior maxilla . . . . .	...	2	...	...	...	2	...	...	...	...
" of inferior maxilla . . . . .	...	1	...	...	...	1	...	...	...	...
" of sternum . . . . .	...	1	...	...	...	...	1	...	...	...
" of radius . . . . .	...	1	...	...	...	...	...	...	1	...
" of submaxillary glands . . . . .	...	1	...	...	...	...	1	...	...	...
" of skin of elbow . . . . .	...	1	...	...	...	...	1	...	...	...
" of testicle . . . . .	...	1	...	...	...	...	1	...	...	...
Recurrent sarcoma of breast . . . . .	...	2	...	...	...	...	...	2	...	...
Papilloma of face . . . . .	...	1	...	...	1	...	...	...	...	...
" of tongue . . . . .	...	1	...	...	...	...	...	...	...	1
Adenoid vegetations of pharynx . . . . .	...	2	1	1	...	1	...	...	...	...
Parotid tumour . . . . .	...	1	...	1	...	...	...	...	...	...
Polypus of external auditory meatus . . . . .	...	1	...	...	...	1	...	...	...	...
" of nose . . . . .	...	3	1	...	...	...	1	...	3	...
" of rectum . . . . .	...	1	...	...	1	...	...	...	...	...
Naso-pharyngeal polypus . . . . .	...	1	...	...	...	1	...	...	...	...
Excision of ulcer of arm . . . . .	...	1	...	...	...	...	1	...	...	...
" of congenital moles . . . . .	...	1	...	...	1	...	...	...	...	...
" of painful scars . . . . .	...	1	1	...	...	2	...	...	...	...
For removal of neuromata . . . . .	...	1	...	...	...	...	1	...	...	...
" of angioma . . . . .	...	1	...	...	1	...	...	...	...	...
" of nævus . . . . .	...	2	3	3	2	...	...	...	...	...
" of adenoma of breast . . . . .	...	6	...	...	2	2	2	...	...	...
" of myo-fibroma . . . . .	...	1	...	...	...	...	...	1	...	...
" of fibroma . . . . .	...	2	...	...	...	...	...	1	1	...

*Surgical Operations.*

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	1	5	1	...	...	...	...	...	...	7	...	...	...	1 chronic inflammatory; glands previously removed in 1.
...	2	14	4	...	...	...	...	...	...	18	...	...	2	1 tuberculous. Fatal cases: 1 ? septicæmia, 1 erysipelas and pleurisy.
...	6	7	3	...	...	...	...	...	...	15	1	...	...	2 readmissions. Erysipelas 1.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Excision of superior maxilla. Preliminary laryngotomy.
...	1	...	...	...	...	...	...	...	...	...	...	...	1	Scraped. Died of exhaustion.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Excision.
...	1	1	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	
...	4	4	...	...	...	...	...	...	...	7	1	...	...	Tonsil removed in 1; glands removed in 2; preliminary ligature of linguals in 2.
1	...	...	...	...	...	...	...	...	...	...	...	...	1	Fatal from shock.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Ulcerating tumour in front of left ear.
...	1	...	1	...	...	...	...	...	...	2	...	...	...	Secondary to epithelioma of lip.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Excised.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Excision of part of upper jaw.
...	1	...	1	...	...	...	...	...	...	1	1	...	...	Second recurrence 1. Partial excision 1.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Myeloid epulis.
...	...	...	...	...	1	...	...	...	...	1	...	...	...	Fourth recurrence.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Myeloid. Excision of lower end.
...	1	...	...	...	...	...	...	...	...	...	...	1	...	Examined only.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Pedunculated of flexure of elbow.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Castration. For one other see Hernia table.
...	2	...	...	...	...	...	...	...	...	...	2	...	...	Same case. Four operations altogether.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	...	
2	1	...	...	...	...	...	...	...	...	3	...	...	...	Tonsils also removed in 1 case.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	Encapsuled.
1	...	...	...	...	...	...	...	...	...	1	...	...	...	Snared.
2	2	...	...	...	...	...	...	...	...	3	...	...	1	Fatal from meningitis due to old necrosis cribriform.
1	...	...	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	...	...	...	Third recurrence.
...	...	1	...	...	...	...	...	...	...	...	1	...	...	? tuberculous.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	1	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	...	...	1	...	...	From stump 9 months after amputation.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Recurrent of shoulder.
1	2	2	...	...	...	...	...	...	...	3	1	...	1	Fatal case: shock after excision, deep nævus of neck.
1	5	...	...	...	...	...	...	...	...	6	...	...	...	1 recurrent, with adenoma also in opposite breast.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Connected with brachial plexus.
...	1	1	...	...	...	...	...	...	...	2	...	...	...	Skull 1, hand 1.

TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
<b>REMOVAL OF TUMOURS AND NEW GROWTHS</b>										
<i>—continued.</i>										
For removal of lipoma . . . . .	1	10	...	...	...	4	5	1	1	...
„ of simple epulis . . . . .	2	1	...	2	...	...	1	...	...	...
„ of exostosis, palate . . . . .	...	1	...	...	...	...	1	...	...	...
„ „ femur . . . . .	1	...	...	...	1	...	...	...	...	...
„ „ fibula . . . . .	1	...	...	1	...	...	...	...	...	...
„ of subungual exostosis . . . . .	2	1	...	...	1	1	1	...	...	...
„ of ovarian cyst . . . . .	...	4	...	...	1	...	...	1	1	1
„ of broad ligament cyst . . . . .	...	1	...	...	...	1	...	...	...	...
„ of cyst of neck . . . . .	1	...	...	1	...	...	...	...	...	...
„ of cyst of epididymis . . . . .	1	...	...	...	1	...	...	...	...	...
„ of alveolar cyst . . . . .	...	1	...	...	...	1	...	...	...	...
„ of dermoid cyst . . . . .	3	3	3	...	2	1	...	...	...	...
„ of sebaceous cyst . . . . .	3	...	...	...	...	...	1	2	...	...
„ of bursa of foot . . . . .	...	1	...	...	1	...	...	...	...	...
„ of patella bursæ . . . . .	...	8	...	...	1	7	...	...	...	...
„ of subcutaneous bursæ . . . . .	1	...	...	...	...	1	...	...	...	...
„ of semi-membranous bursa . . . . .	1	...	...	...	...	...	1	...	...	...
<b>CIRCULATORY SYSTEM.</b>										
Ligation of common carotid . . . . .	1	...	...	...	...	1	...	...	...	...
„ „ . . . . .	1	...	...	...	...	...	1	...	...	...
„ of anterior and posterior tibials . . . . .	1	...	...	...	1	...	...	...	...	...
„ of internal jugular vein . . . . .	...	2	...	1	...	1	...	...	...	...
Excision of cirroid aneurysm . . . . .	...	1	...	...	...	1	...	...	...	...
„ of varicose veins . . . . .	29	8	...	...	9	23	2	3	...	...
„ of varicocele . . . . .	32	...	...	...	15	17	...	...	...	...
<b>RESPIRATORY SYSTEM.</b>										
Tracheotomy . . . . .	3	2	2	...	...	...	2	...	...	1
Resection of ribs for empyema . . . . .	3	...	1	...	2	...	...	...	...	...
Examination of larynx . . . . .	1	...	1	...	...	...	...	...	...	...
<b>DUCTLESS GLANDS.</b>										
Excision of one lobe of thyroid . . . . .	...	4	...	...	2	1	1	...	...	...
„ of cystic adenoma . . . . .	...	1	...	...	...	...	1	...	...	...
<b>LYMPHATIC SYSTEM.</b>										
Removal of glands . . . . .	22	27	1	11	18	13	4	2	...	...
„ of lymphadenoma of neck . . . . .	1	...	1	...	...	...	...	...	...	...

*Operations—continued.*

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
...	10	...	...	1	...	...	...	...	11	...	...	...	...	1 diffuse (of inner sides both knees).
2	1	...	...	...	...	...	...	...	3	...	...	...	...	1 readmission for recurrence.
1	...	...	...	...	...	...	...	...	1	...	...	...	...	Removed with chisel.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Lower extremity.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Upper extremity.
...	3	...	...	...	...	...	...	...	3	...	...	...	...	All of great toe.
...	3	1	...	...	...	...	...	...	4	...	...	...	...	Double in 1 case.
...	1	...	...	...	...	...	...	...	...	...	...	...	1	Fatal from peritonitis.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	Posterior triangle.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	4	1	1	...	...	...	...	...	6	...	...	...	...	1 second recurrence.
...	2	1	...	...	...	...	...	...	3	...	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	3	5	...	...	...	...	...	...	8	...	...	...	...	Double in 1 case.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	No communication with joint.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	...	For aneurysm same vessel.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	For popliteal aneurysm.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	For secondary hæmorrhage after wound.
1	...	...	...	1	...	...	...	...	1	...	...	1	...	Amputation later.
...	...	...	...	1	...	...	...	...	1	...	...	...	...	Lateral sinus exposed in both.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Occipital region.
...	33	4	...	...	...	...	...	...	37	...	...	...	...	All of lower extremity; double in 3 cases.
...	4	20	8	...	...	...	...	...	32	...	...	...	...	1 double.
1	1	2	1	...	...	...	...	...	1	2	...	2	...	Fatal cases from scalds of larynx.
1	...	...	1	1	...	...	...	...	...	3	...	...	...	Two operations in 2 (Estlander's). Readmissions 2.
...	...	...	1	...	...	...	...	...	1	...	...	...	...	Obstruction after tracheotomy.
...	...	4	...	...	...	...	...	...	4	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Right lobe 2, left lobe 2.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	Encapsuled of left lobe.
2	28	16	3	...	...	...	...	...	48	1	...	...	...	Erysipelas 1, scarlet fever 1. Two operations in 2 cases.
...	...	...	...	1	...	...	...	...	1	...	...	...	...	

TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
<b>NERVOUS SYSTEM.</b>										
Stretching spinal accessory . . . . .	1	...	...	...	...	...	1	...	...	...
Excision posterior branches upper 2 or 3 cervical nerves . . . . .	1	...	...	...	...	...	1	...	...	...
Excision mental nerve . . . . .	...	1	...	...	...	1	...	...	...	...
Resection and suture of ulna nerve . . . . .	2	...	...	...	1	1	...	...	...	...
For dislocated ulna nerve . . . . .	1	1	...	...	...	1	1	...	...	...
<b>DIGESTIVE SYSTEM.</b>										
Gastrostomy . . . . .	1	...	...	...	...	...	1	...	...	...
Gastro-jejunostomy . . . . .	...	1	...	...	...	...	1	...	...	...
Enterotomy . . . . .	...	1	...	...	...	...	...	1	...	...
Colotomy—										
<i>a.</i> Left lumbar . . . . .	1	4	...	...	...	1	...	...	1	3
<i>b.</i> Left inguinal . . . . .	4	2	1	...	...	...	...	...	2	3
<i>c.</i> Right inguinal . . . . .	1	...	...	...	...	1	...	...	...	...
Herniotomy—										
<i>a.</i> Femoral . . . . .	...	10	...	...	...	...	4	3	...	3
<i>b.</i> Umbilical . . . . .	...	2	...	...	...	...	...	1	1	...
Radical cure—										
<i>a.</i> Inguinal . . . . .	31	3	1	3	13	10	3	1	2	1
<i>b.</i> Femoral . . . . .	1	4	...	...	...	...	...	1	3	1
<i>c.</i> Umbilical . . . . .	...	1	...	...	...	...	1	...	...	...
<i>d.</i> Ventral . . . . .	1	...	...	...	...	...	...	...	1	...
Radical cure of strangulated hernia—										
<i>a.</i> Inguinal . . . . .	18	...	1	...	...	3	6	2	5	1
<i>b.</i> Femoral . . . . .	...	6	...	...	...	...	1	2	1	2
<i>c.</i> Umbilical . . . . .	...	1	...	...	...	...	...	1	...	...
Removal of old femoral sac . . . . .	...	2	...	...	...	...	...	2	...	...
Examination of old inguinal sac . . . . .	1	...	...	...	...	...	...	...	...	1
Circular enterorrhaphy . . . . .	1	1	...	...	...	...	2	...	...	...
Examination of fæcal fistula . . . . .	1	...	...	...	1	...	...	...	...	...
Abdominal section for—										
<i>a.</i> Examination of liver . . . . .	...	1	...	...	...	1	...	...	...	...
<i>b.</i> Pelvic hæmatocele . . . . .	...	1	...	...	...	1	...	...	...	...



*Operations—continued.*

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	...	...	...	1	...	...	...	...	...	1	...	...	For spasmodic torticollis.
...	...	...	...	1	...	...	...	...	...	1	...	...	Same case.
...	...	...	1	...	...	...	...	...	...	1	...	...	For neuralgia.
...	1	...	1	...	...	...	...	...	...	1	1	...	Median nerve adherent to scar in 1 case.
...	...	2	...	...	...	...	...	...	2	...	...	...	Sutured in position, &c.
...	1	...	...	...	...	...	...	...	...	...	...	1	For malignant disease œsophagus.
1	...	...	...	...	...	...	...	...	...	...	...	1	
...	1	...	...	...	...	...	...	...	...	...	...	1	Left inguinal, for carcinoma of pelvis. Fatal from exhaustion.
...	...	...	4	1	...	...	...	...	...	3	...	2	Carcinoma of rectum 4 (chronic obstruction in 3); fistulæ 1.
1	1	3	1	...	...	...	...	...	...	2	...	4	Carcinoma of rectum 4; imperforate rectum 1; ulcer of sigmoid 1.
1	...	...	...	...	...	...	...	...	...	...	...	1	For carcinoma of hepatic flexure; too extensive for removal.
3	...	4	1	1	1	...	...	...	3	2	...	5	1 fatal 5 months later; after operation for artificial anus.
2	...	...	...	...	...	...	...	...	...	...	...	2	Excision of transverse colon in 1.
2	1	21	10	...	...	...	...	...	32	...	...	2	1 double. Fatal cases: pneumonia 1, internal strangulation 1.
...	2	2	1	...	...	...	...	...	5	...	...	...	1 recurrent after radical cure 4 years previously.
1	...	...	...	...	...	...	...	...	...	...	...	1	Fatal from peritonitis. Admitted for Potts' fracture.
...	...	1	...	...	...	...	...	...	1	...	...	...	
2	3	10	3	...	...	...	...	...	16	...	...	2	Fatal cases: 1 exhaustion (gut gangrenous); 1 ? pneumonia, no P.M.
...	...	4	2	...	...	...	...	...	6	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	2	...	...	...	...	...	...	2	...	...	...	No communication with abdominal cavity.
1	...	...	...	...	...	...	...	...	...	...	...	1	P.M.—Ruptured intestine.
...	1	...	...	1	...	...	...	...	1	...	...	1	Senn's plates 1.
...	...	...	1	...	...	...	...	...	...	...	1	...	Fistula communicating with sigmoid.
...	...	1	...	...	...	...	...	...	...	...	1	...	Malignant.
...	...	...	1	...	...	...	...	...	...	...	1	...	

TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	
DIGESTIVE SYSTEM—continued.											
Abdominal section for—											
<i>c.</i> Carcinoma of hepatic flexure . . .	1	...	...	...	...	1	...	...	...	...	
<i>d.</i> Acute intestinal obstruction . . .	1	...	...	1	...	...	...	...	...	...	
<i>e.</i> Ruptured colon . . .	1	...	...	...	...	1	...	...	...	...	
<i>f.</i> Perforative peritonitis . . .	1	...	...	1	...	...	...	...	...	...	
Punctured wound of abdomen, prolapse of omentum	1	...	...	...	1	...	...	...	...	...	
For hæmorrhoids—											
<i>a.</i> Whitehead's operation . . .	5	9	...	...	...	3	4	3	3	1	
<i>b.</i> Ligature . . .	...	3	...	...	...	1	1	1	...	...	
<i>c.</i> Clamp and cautery . . .	2	...	...	...	...	...	2	...	...	...	
Fistula in ano . . .	19	9	1	...	3	7	12	3	2	...	
Fissure of anus . . .	1	1	...	...	...	...	...	2	...	...	
Proctotomy . . .	...	1	...	...	...	...	1	...	...	...	
For imperforate rectum . . .	2	...	2	...	...	...	...	...	...	...	
"    anus . . .	1	...	1	...	...	...	...	...	...	...	
Removal of stump from antrum . . .	...	1	...	...	...	1	...	...	...	...	
GENITO-URINARY SYSTEM.											
Circumcision . . .	20	...	4	5	5	3	1	1	...	1	
Vegetations of vulva . . .	...	4	...	...	...	4	...	...	...	...	
Urethral caruncle . . .	...	2	...	...	...	1	...	...	...	1	
Simple tapping of tunica vaginalis . . .	3	...	...	...	...	...	1	2	...	...	
Injection of tunica vaginalis . . .	3	...	...	...	...	...	1	1	1	...	
Hydrocele of tunica vaginalis . . .	8	...	1	...	2	...	3	...	2	...	
"    of cord . . .	2	...	1	...	1	...	...	...	...	...	
Spermatocele . . .	2	...	...	...	1	...	...	1	...	...	
Castration . . .	9	...	1	2	1	3	...	2	...	...	
External urethrotomy . . .	5	...	1	...	1	1	1	...	...	1	
Internal urethrotomy . . .	2	...	...	...	...	...	1	...	1	...	
Urethral calculus . . .	1	...	...	1	...	...	...	...	...	...	
Cock's puncture . . .	5	...	...	...	...	...	2	2	...	1	
Perineal section . . .	12	...	...	...	...	2	6	4	...	...	
Supra-pubic cystotomy . . .	3	...	...	...	...	...	1	...	1	1	
Lateral lithotomy . . .	1	...	...	...	1	...	...	...	...	...	
Lithotrity . . .	3	...	1	...	...	...	1	...	...	1	

## Operations—continued.

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
1	...	...	...	...	...	...	...	...	...	...	...	1	Too extensive for removal. Right inguinal colotomy done.
...	...	1	...	...	...	...	...	...	1	...	...	...	Volvulus sigmoid flexure; gut punctured.
1	...	...	...	...	...	...	...	...	...	...	...	1	Lembert's suture. Fatal from exhaustion.
1	...	...	...	...	...	...	...	...	...	...	...	1	Excision of vermiform appendix; general suppurative peritonitis.
...	...	1	...	...	...	...	...	...	1	...	...	...	Stab with penknife. Wound enlarged; omentum returned.
...	7	7	...	...	...	...	...	...	14	...	...	...	
...	1	2	...	...	...	...	...	...	3	...	...	...	
...	...	1	1	...	...	...	...	...	2	...	...	...	Two operations in 1 case.
...	12	14	2	...	...	...	...	...	28	...	...	...	
...	2	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Syphilitic stricture.
...	2	...	...	...	...	...	...	...	...	...	...	2	Septum divided in each case. Fatal from exhaustion.
1	...	...	...	...	...	...	...	...	...	...	...	1	Perineal incision. Fatal from exhaustion.
1	...	...	...	...	...	...	...	...	1	...	...	...	
4	8	4	3	...	...	...	1	...	20	...	...	...	12 congenital, 2 inflammatory, 1 with warts, 5 with soft sores (prepuce slit in 2).
...	2	1	1	...	...	...	...	...	4	...	...	...	
...	1	...	1	...	...	...	...	...	2	...	...	...	Removed with scissors.
...	...	2	...	1	...	...	...	...	3	...	...	...	All with syphilitic testicle.
...	2	1	...	...	...	...	...	...	2	1	...	...	Carbolic acid.
...	2	5	1	...	...	...	...	...	8	...	...	...	Radical cure by incision (with removal of part of tunica vaginalis in some).
...	...	1	1	...	...	...	...	...	2	...	...	...	Dissected out.
...	1	...	1	...	...	...	...	...	2	...	...	...	Partly dissected away, and sutured to skin.
...	2	4	2	1	...	...	...	...	8	...	...	1	Tuberculous testicle 5, syphilitic 1, undescended 2, cystic 1.
...	...	...	4	1	...	...	...	...	4	1	...	...	Impacted calculus 2, stricture 3 (fistulæ 1, retention 1).
...	1	...	...	1	...	...	...	...	2	...	...	...	For stricture.
...	1	...	...	...	...	...	...	...	1	...	...	...	Removed with forceps.
...	2	1	...	1	1	...	...	...	1	2	...	2	Retention 1, extravasation 1, cystitis 2, stricture 1.
1	3	5	1	2	...	...	...	...	8	...	...	4	Extravasation 4, abscess 7, ruptured urethra 1.
...	1	...	...	2	...	...	...	...	1	1	...	1	Calculus 1, cystitis 1, preliminary to closure of retro-urethral fistula 1.
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	2	...	1	...	...	...	...	...	2	...	...	1	Two crushings in 1 case. Fatal case: pelvic cellulitis.

TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
<b>GENITO-URINARY SYSTEM—<i>continued.</i></b>										
Aspiration of bladder . . . . .	1	...	...	...	...	...	1	...	...	...
Nephrectomy . . . . .	...	3	...	...	...	1	...	2	...	...
Nephrotomy . . . . .	...	3	...	...	...	1	...	1	1	...
Nephro-lithotomy . . . . .	1	2	...	...	...	...	1	1	...	1
Exploration of kidney . . . . .	1	...	...	...	...	1	...	...	...	...
Sinus after nephrectomy . . . . .	...	1	...	...	...	...	1	...	...	...
Perinephritic abscess . . . . .	1	1	...	...	...	...	1	1	...	...
For fistula—										
<i>a.</i> Urinary . . . . .	3	...	...	...	...	1	...	2	...	...
<i>b.</i> Vesico-vaginal . . . . .	...	1	...	...	1	...	...	...	...	...
<i>c.</i> Recto-urethral . . . . .	1	...	...	...	...	...	...	...	1	...
Restoration of perineum . . . . .	...	2	...	...	...	1	1	...	...	...
Vaginal puncture of hæmatocele . . . . .	...	1	...	...	...	1	...	...	...	...
Dilatation of female urethra . . . . .	...	1	...	...	1	...	...	...	...	...
Excision of sinus of breast . . . . .	...	1	...	...	...	1	...	...	...	...
<b>LOCOMOTOR SYSTEM.</b>										
<i>Removal of necrosed bone from—</i>										
<i>a.</i> Lower jaw . . . . .	2	3	...	1	2	2	...	...	...	...
<i>b.</i> Rib . . . . .	1	...	...	...	1	...	...	...	...	...
<i>c.</i> Pelvis . . . . .	2	1	1	...	1	1	...	...	...	...
<i>d.</i> Humerus . . . . .	1	3	2	1	1	...	...	...	...	...
<i>e.</i> Ulna . . . . .	...	1	...	...	1	...	...	...	...	...
<i>f.</i> Femur . . . . .	5	3	1	1	3	2	...	...	1	...
<i>g.</i> Tibia . . . . .	6	...	...	1	2	...	1	1	1	...
<i>h.</i> Fibula . . . . .	1	...	...	...	1	...	...	...	...	...
<i>i.</i> Phalanges . . . . .	1	...	...	...	...	...	...	...	1	...
<i>j.</i> Malar, femur, and tibiæ . . . . .	1	...	...	...	1	...	...	...	...	...
<i>Scraping for caries of—</i>										
<i>a.</i> Mastoid . . . . .	3	1	1	1	2	...	...	...	...	...
<i>b.</i> Pelvis . . . . .	2	1	...	...	1	...	2	...	...	...
<i>c.</i> Rib . . . . .	...	1	...	...	...	...	...	1	...	...
<i>d.</i> Ulna . . . . .	1	...	...	1	...	...	...	...	...	...
<i>e.</i> Metacarpus, &c. . . . .	2	2	...	1	2	1	...	...	...	...
<i>f.</i> Femur . . . . .	3	2	...	2	...	2	1	...	...	...
<i>g.</i> Tibia . . . . .	1	...	...	1	...	...	...	...	...	...
<i>h.</i> Tarsus . . . . .	4	2	2	...	2	...	1	1	...	...
<i>Trephining—</i>										
<i>a.</i> Skull . . . . .	...	2	1	...	...	...	...	...	1	...

*Operations—continued.*

Duration of residence.									Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	...	1	...	...	...	...	...	...	1	...	...	...	Above pubes for retention and stricture.
...	...	...	2	1	...	...	...	...	3	...	...	...	Calculi 2, tuberculous kidney 1.
...	...	1	...	2	...	...	...	...	2	1	...	...	Pyo-nephrosis 1, tuberculous kidney 2.
1	...	1	1	...	...	...	...	...	2	...	...	1	Fatal case: shock. Abdominal as well as lumbar incision in 1 case.
...	...	...	1	...	...	...	...	...	...	1	...	...	? tuberculous.
...	...	...	1	...	...	...	...	...	1	...	...	...	3 explorations.
...	1	...	1	...	...	...	...	...	...	1	...	1	Fatal case from exhaustion. P.M.—Pyo-nephrosis.
...	...	1	2	...	...	...	...	...	2	1	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	...	...	1	...	...	...	...	...	1	...	...	2 plastic operations (preliminary supra-pubic cystotomy).
...	...	1	1	...	...	...	...	...	2	...	...	...	1 into rectum.
...	...	1	...	...	...	...	...	...	...	1	...	...	Abdominal exploration 12 days before.
...	...	1	...	...	...	...	...	...	...	...	1	...	For incontinence of urine.
...	1	...	...	...	...	...	...	...	1	...	...	...	? tuberculous.
2	3	...	...	...	...	...	...	...	5	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	2	...	...	...	...	...	...	2	...	...	1	Fatal case from nephritis.
...	...	1	2	1	...	...	...	...	4	...	...	...	1 after acute necrosis.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	2	1	2	1	1	...	1	...	6	2	...	...	
...	...	4	2	...	...	...	...	...	5	1	...	...	2 after acute necrosis.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	Tuberculous.
...	2	1	1	...	...	...	...	...	4	...	...	...	Double in 1 case.
...	...	1	1	1	...	...	...	...	3	...	...	...	Erysipelas 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
1	1	1	1	...	...	...	...	...	3	1	...	...	
...	...	1	2	2	...	...	...	...	4	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	...	2	3	1	...	...	...	2	4	...	...	
1	...	...	1	...	...	...	...	...	1	...	...	1	Punctured fracture 1, coma 1. P.M.—Fracture of base.



TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	
LOCOMOTOR SYSTEM— <i>continued.</i>											
<i>Trephining—</i>											
<i>b.</i> Skull, with elevation . . . . .	3	2	...	1	...	1	1	1	1	...	
<i>c.</i> Mastoid . . . . .	3	2	...	1	1	3	...	...	...	...	
<i>d.</i> For lateral sinus . . . . .	...	2	...	1	...	1	...	...	...	...	
<i>e.</i> Femur . . . . .	4	1	2	...	...	3	...	...	...	...	
<i>f.</i> Tibia . . . . .	4	1	...	...	3	2	...	...	...	...	
<i>Excision of joints—</i>											
<i>a.</i> Shoulder . . . . .	2	...	...	1	...	1	...	...	...	...	
<i>b.</i> Elbow . . . . .	3	2	...	...	2	1	1	1	...	...	
<i>c.</i> Wrist . . . . .	1	1	...	...	1	...	1	...	...	...	
<i>d.</i> Hip . . . . .	5	2	2	2	2	...	1	...	...	...	
<i>e.</i> Knee . . . . .	9	4	...	...	3	7	2	1	...	...	
<i>f.</i> Metatarso-phalangeal . . . . .	2	1	...	...	1	2	...	...	...	...	
<i>g.</i> Inter-phalangeal . . . . .	2	2	...	...	2	1	1	...	...	...	
Mikulicz's osteoplastic resection of foot . . . . .	1	...	...	...	...	...	...	1	...	...	
Arthrectomy of knee . . . . .	4	2	...	2	1	3	...	...	...	...	
„ of ankle . . . . .	1	...	...	1	...	...	...	...	...	...	
Arthrotomy of hip . . . . .	5	3	2	5	...	...	1	...	...	...	
„ of knee . . . . .	2	1	2	...	1	...	...	...	...	...	
„ of ankle . . . . .	1	...	...	...	...	1	...	...	...	...	
„ of elbow . . . . .	...	1	1	...	...	...	...	...	...	...	
Scraping sinuses of hip . . . . .	1	2	...	1	...	2	...	...	...	...	
„ of knee . . . . .	2	1	...	2	1	...	...	...	...	...	
„ of ankle . . . . .	...	1	...	1	...	...	...	...	...	...	
„ of elbow . . . . .	...	1	...	...	1	...	...	...	...	...	
„ of wrist . . . . .	1	1	...	...	1	1	...	...	...	...	
Aspiration of knee . . . . .	...	1	...	...	...	1	...	...	...	...	
Forcible movement of hip . . . . .	1	...	...	...	1	...	...	...	...	...	
„ of wrist . . . . .	1	...	...	...	...	...	...	1	...	...	
Osteotomy of femur . . . . .	8	2	...	1	8	1	...	...	...	...	
„ of tibia and fibula . . . . .	1	...	...	...	1	...	...	...	...	...	
For ankylosis of knee with flexion . . . . .	3	...	...	...	3	...	...	...	...	...	
For curved tibiæ . . . . .	1	1	...	...	2	...	...	...	...	...	

## Operations—continued.

Duration of residence.										Result.				Remarks.
Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12		C.	R.	U.	D.	
2	1	1	1	...	...	...	...	...	2	...	...	...	3	All for compound comminuted depressed fractures.
...	...	1	2	2	...	...	...	...	5	...	...	...	...	
1	...	...	...	1	...	...	...	...	1	...	...	...	1	Mastoid previously trephined 1; ligature of internal jugular vein.
...	...	1	1	...	1	2	...	...	1	4	...	...	...	
1	...	...	3	1	...	...	...	...	2	2	...	...	1	Amputation of thigh later in 1.
...	...	...	...	1	...	...	1	...	1	1	...	...	...	For tuberculous disease.
...	...	2	1	...	1	1	...	...	3	2	...	...	...	Old injury 1, disease 4.
...	...	...	...	1	1	...	...	...	...	2	...	...	...	Both followed by amputation.
...	...	2	1	1	3	...	...	...	3	2	...	...	2	Fatal cases: exhaustion 1, amputation at hip-joint later 1.
...	...	1	2	7	2	1	...	...	10	2	...	...	1	Secondary hæmorrhage and amputation at thigh 1. Fatal case from nephritis.
...	...	2	...	1	...	...	...	...	3	...	...	...	...	5 excisions in all. Hallux valgus 3, hallux flexus 2.
...	2	1	1	...	...	...	...	...	4	...	...	...	...	12 excisions in all (hammer-toe 2).
...	...	...	...	1	...	...	...	...	1	...	...	...	...	For epithelioma of heel.
...	...	1	1	3	...	1	...	...	3	3	...	...	...	3 partial only.
...	...	...	...	...	1	...	...	...	...	1	...	...	...	
...	...	2	2	2	1	1	...	...	5	2	...	...	1	Joint scraped in 6 (head of bone removed in 1); preliminary to excision in 2.
...	...	...	...	2	1	...	...	...	1	1	1	...	...	For acute suppurative arthritis 1; amputation later in 1.
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Syme subsequently.
...	...	...	...	1	...	...	...	...	...	1	...	...	...	Sequestrotomy subsequently.
...	...	1	2	...	...	...	...	...	1	2	...	...	...	
...	...	2	1	...	...	...	...	...	1	2	...	...	...	1 readmitted later for amputation of thigh.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Old arthrectomy.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Old excision.
...	1	1	...	...	...	...	...	...	1	1	...	...	...	
...	...	...	...	...	...	1	...	...	1	...	...	...	...	Necrosis of femur. Hæmorrhage into knee-joint.
...	...	1	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	...	...	1	Old Collis. Death under chloroform.
...	...	...	4	3	2	1	...	...	9	1	...	...	...	Neck 1, subtrochanteric 3, supra-condyloid 6 (1 double).
...	...	...	1	...	...	...	...	...	1	...	...	...	...	For deformity after arthrectomy.
...	...	...	2	1	...	...	...	...	3	...	...	...	...	Removal of a wedge in all (1 an old case of excision).
...	...	...	...	2	...	...	...	...	1	1	...	...	...	Double in 1. Previous double osteotomy of femur in 1.

TABLE III—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
LOCOMOTOR SYSTEM—continued.										
Refracture of tibia and fibula . . . . .	...	1	..	...	...	...	...	1	...	...
„ of radius and ulna . . . . .	...	1	1	...	...	...	...	...	...	...
Angular deformity of femur after fracture	...	1	...	...	...	...	...	1	...	...
Exploration of great trochanter . . . . .	1	...	...	...	...	1	...	...	...	...
For fracture of patella—										
a. Approximation with pins, &c. . . . .	2	2	...	...	...	1	2	1	...	...
b. Wiring by Kocher's method . . . . .	...	2	...	...	...	...	...	...	2	...
c. „ by Lister's method . . . . .	5	1	...	...	...	2	...	3	1	...
Wiring of fractures—										
a. Olecranon . . . . .	3	...	...	...	...	1	...	2	...	...
b. Compound tibia . . . . .	1	...	...	...	...	...	...	1	...	...
c. „ metacarpal . . . . .	1	...	...	...	1	...	...	...	...	...
Pegging ununited, fracture of humerus . . . . .	1	...	...	...	...	...	...	...	1	...
Reduction of dislocations—										
a. Shoulder . . . . .	5	1	...	...	...	1	...	1	3	1
b. Hip . . . . .	...	1	1	...	...	...	...	...	...	...
c. Astragalus . . . . .	...	1	...	...	...	1	...	...	...	...
Primary amputation of—										
a. Arm . . . . .	1	...	1	...	...	...	...	...	...	...
b. Forearm . . . . .	4	1	...	...	2	1	1	...	1	...
c. Fingers . . . . .	7	1	...	...	3	...	2	1	2	..
d. Thigh . . . . .	2	...	1	...	...	..	...	1	...	...
e. Through knee-joint . . . . .	1	...	...	1	...	...	...	...	...	...
f. Leg . . . . .	2	2	...	...	...	...	2	1	...	1
g. Toes . . . . .	4	...	1	...	2	1	...	...	...	...
Secondary amputation of—										
a. Thigh . . . . .	3	...	...	...	1	1	...	...	1	...
b. Leg . . . . .	1	...	...	...	...	...	1	...	...	...
c. Foot . . . . .	2	...	...	...	...	2	...	...	...	...
Amputation for disease of—										
a. Shoulder . . . . .	...	1	...	...	...	...	1	...	...	...
b. Forearm . . . . .	3	1	...	...	1	1	1	...	...	1

## Operations—continued.

Duration of residence.									Result.				Remarks.
Dys 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts. +12	C.	R.	U.	D.	
...	...	1	...	...	...	...	...	...	1	...	...	...	For malposition of Potts' fracture. Osteo- clast used.
...	1	...	...	...	...	...	...	...	1	...	...	...	For malposition after fracture.
...	...	...	...	1	...	...	...	...	...	1	...	...	Partly reduced under anæsthetic.
...	...	...	1	...	...	...	...	...	1	...	...	...	Impacted fracture simulating dorsal dislo- cation. Incision.
...	1	1	2	...	...	...	...	...	4	...	...	...	Mayo Robson's method 2; Anderson's method 2.
...	...	...	2	...	...	...	...	...	2	...	...	...	
...	...	1	4	1	...	...	...	...	6	...	...	...	1 case 18 months duration.
...	...	2	...	1	...	...	...	...	2	1	...	...	Old fracture 1 case.
...	...	...	...	...	...	...	1	...	1	...	...	...	Necrosis.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	Kitten's periosteum laid round fracture.
3	3	...	...	...	...	...	...	...	6	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	Dorsal.
...	...	1	...	...	...	...	...	...	1	...	...	...	Forwards and outwards with fracture of its neck.
...	...	...	1	...	...	...	...	...	1	...	...	...	For simple fracture with crushing.
...	...	5	...	...	...	...	...	...	5	...	...	...	
1	5	2	...	...	...	...	...	...	8	...	...	...	
...	...	...	2	...	...	...	...	...	2	...	...	...	For compound comminuted fracture tibia and fibula 1; comminuted fracture femur 1.
...	...	...	1	...	...	...	...	...	1	...	...	...	For compound comminuted fracture tibia and fibula.
1	...	2	1	...	...	...	...	...	2	...	...	2	Fatal cases: exhaustion 1, pneumonia 1.
...	1	2	1	...	...	...	...	...	4	...	...	...	11 amputations in all; 10 at metatarso- phalangeal joint.
...	...	...	1	2	...	...	...	...	3	...	...	...	For gangrene 1, secondary hæmorrhage 1, fracture and cellulitis 1.
1	...	...	...	...	...	...	...	...	...	...	...	1	For compound comminuted fracture tibia and fibula. Fatal from delirium tremens.
...	...	...	2	...	...	...	...	...	1	...	1	...	Same case, for compound comminuted fracture metatarsus. Modified Chopart's followed by Syme.
...	...	...	...	1	...	...	...	...	1	...	...	...	Spontaneous fracture due to carcinoma, secondary to rectum.
...	...	3	...	1	...	...	...	...	4	...	...	...	Old excision of wrist 2.

TABLE III.—*Surgical*

SURGICAL OPERATIONS.	Sex.		Age.								
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	
LOCOMOTOR SYSTEM—continued.											
<i>Amputation for disease of—</i>											
c. Fingers . . . . .	2	4	...	...	1	1	1	...	1	2	
d. Hip . . . . .	2	...	...	...	2	...	...	...	...	...	
e. Thigh . . . . .	14	3	2	1	4	2	2	4	1	1	
f. Leg . . . . .	6	1	...	1	1	2	2	...	...	1	
g. Through knee-joint . . . . .	...	2	...	...	1	...	...	1	...	...	
h. Foot . . . . .	4	2	...	...	2	4	...	...	...	...	
i. Toes . . . . .	3	5	...	...	3	1	2	...	2	...	
<i>Reamputation of—</i>											
a. Arm . . . . .	...	1	...	...	1	...	...	...	...	...	
b. Thigh . . . . .	2	...	...	...	2	...	...	...	...	...	
c. Leg . . . . .	...	1	...	...	1	...	...	...	...	...	
<i>Muscles, tendons, &amp;c.—</i>											
Tenotomy for club-foot . . . . .	5	11	8	2	4	2	...	...	...	...	
„ for contracted toe . . . . .	1	...	...	...	1	...	...	...	...	...	
„ for contracted knee . . . . .	1	...	...	...	1	...	...	...	...	...	
For Dupuytren's contraction . . . . .	3	...	...	...	...	...	...	1	2	...	
Myotomy of sterno-mastoid . . . . .	...	1	...	...	1	...	...	...	...	...	
Suturing of rectus femoris . . . . .	1	...	...	...	...	1	...	...	...	...	
„ of cut tendons and nerves . . . . .	4	1	...	...	2	2	...	1	...	...	
For compound ganglion of wrist . . . . .	1	2	...	...	...	3	...	...	...	...	
For tuberculous tendon sheath . . . . .	2	...	...	...	...	1	1	...	...	...	
REPARATIVE OPERATIONS.											
Single harelip . . . . .	8	2	10	...	...	...	...	...	...	...	
Double harelip . . . . .	...	1	1	...	...	...	...	...	...	...	
Cleft palate . . . . .	3	2	...	2	3	...	...	...	...	...	
Cleft of soft palate . . . . .	...	1	...	...	1	...	...	...	...	...	
For perforation of hard palate . . . . .	...	3	...	...	1	...	2	...	...	...	
Rhinoplasty . . . . .	...	1	...	1	...	...	...	...	...	...	
Plastic of face . . . . .	2	1	...	2	...	1	...	...	...	...	
„ of elbow . . . . .	1	...	...	...	1	...	...	...	...	...	
„ of hand . . . . .	3	...	1	...	1	...	...	...	1	...	
For extroversion of bladder . . . . .	1	...	...	...	1	...	...	...	...	...	



*Operations—continued.*

Duration of residence.									Result.				REMARKS.
Dys. 1-4	Dys 5-13	Wks 3-4	Mts. 1-2	Mts. 2-4	Mts. 4-6	Mts. 6-9	Mts. 9-12	Mts +12	C.	R.	U.	D.	
...	2	3	1	...	...	...	...	...	6	...	...	...	Sarcoma femur 1, morbus coxæ 1. Fatal from exhaustion.
...	...	1	1	...	...	...	...	...	1	...	...	1	
...	...	9	6	2	...	...	...	...	13	1	...	3	For infantile paralysis.
...	...	4	3	...	...	...	...	...	7	...	...	...	
...	...	1	1	...	...	...	...	...	2	...	...	...	
...	...	1	1	4	...	...	...	...	5	1	...	...	
...	3	5	...	...	...	...	...	...	7	1	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	For conical stump.
...	1	1	1	...	...	...	...	...	2	...	...	...	Ditto.
...	1	...	...	...	...	...	...	...	1	...	...	...	Ditto.
2	6	4	3	1	...	...	...	...	14	2	...	...	Equinus 6, varus 2, equino-varus 7, calcaneo-valgus 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	Extensor tendon, fifth toe.
...	...	...	...	1	...	...	...	...	1	...	...	...	Double.
...	1	2	...	...	...	...	...	...	3	...	...	...	1 double; subcutaneous division 1; contracting tissue dissected out in 2.
...	...	...	1	...	...	...	...	...	1	...	...	...	For torticollis.
...	...	...	1	...	...	...	...	...	1	...	...	...	After wound of thigh.
...	...	5	...	...	...	...	...	...	5	...	...	...	Median 2, ulna 2.
...	2	...	1	...	...	...	...	...	2	1	...	...	Incision and scraping.
...	...	2	...	...	...	...	...	...	2	...	...	...	Wrist 1, ankle 1. Both scraped.
1	6	3	...	...	...	...	...	...	7	2	...	1	Fatal case from exhaustion. Scarlet fever 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	Premaxilla removed.
...	1	2	1	1	...	...	...	...	5	...	...	...	Median harelip also in 1; operation same time. Scarlet fever.
...	1	...	...	...	...	...	...	...	1	...	...	...	Hard palate previously united.
...	...	3	...	...	...	...	...	...	1	1	1	...	2 syphilitic. 1 after operation for cleft palate.
...	...	...	1	...	...	...	...	...	1	...	...	...	Indian operation.
...	1	2	...	...	...	...	...	...	2	1	...	...	Readmission 1.
...	...	...	...	1	...	...	...	...	...	1	...	...	Operation in two stages. Abdominal flaps.
...	...	3	...	...	...	...	...	...	3	...	...	...	Webbed fingers 1, contraction from burn 1, lacerated wound 1. Abdominal flap in 2 latter cases.
...	...	...	...	...	...	...	...	1	1	...	...	...	8 operations in all. Erysipelas.



## Operations—continued.

Duration of residence.										Result.				REMARKS.
Dys.	Dys.	Wks	Mts.	Mts.	Mts.	Mts.	Mts.	Mts.	Mts.	C.	R.	U.	D.	
1-4	5-13	2-4	1-2	2-4	4-6	6-9	9-12	+12						
...	5	1	...	...	...	...	...	...	6	...	...	...	...	For injury 5; old staphyloma 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Old excision, with sinus over each wire suture.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Old radical cure. Suture surrounded by dense tissue.
...	1	...	...	...	...	...	...	...	...	1	...	...	...	Exploratory incision.
...	...	1	...	...	...	...	...	...	1	...	...	...	...	Crush of leg. Exploratory incision. Amputation for gangrene later.
...	1	1	1	...	...	...	...	...	1	...	...	2	...	Fatal cases: chronic renal disease; 1? septic trouble.
3	5	5	4	3	...	...	...	...	14	6	...	...	...	Admitted with erysipelas 1; contracted erysipelas in hospital 1.
...	2	...	...	...	...	...	...	...	1	...	...	1	...	Fatal case: exhaustion.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	Readmission.
...	1	...	...	...	...	...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	...	...	...	1	...	...	Exploratory incision. Gumma.
...	...	...	...	1	...	...	...	...	1	...	...	...	...	" " "
2	...	...	...	5	2	...	...	2	...	8	...	3	...	Opened through alveolus.
...	...	...	...	1	2	1	1	...	1	3	...	1	...	Lumbar and inguinal incisions in 2. Double in 2 cases.
...	...	...	1	...	...	...	...	...	...	1	...	...	...	Irrigation with boracic in 4, sterilised water 1. Cavities scraped and closed with sutures. Operation repeated in 4 cases.
										772	115	10	78	
										975				

## SUMMARY OF DISEASES.

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### GENERAL DISEASES.

#### ERYSIPELAS (admitted as such).

Males 16, females 14. C. 29, D. 1.

*Situation*.—Face 12; chest 1; upper extremity 7; lower extremity 9; labium 1.

*Cause*.—Contusions 2; abrasions 6; incised wounds 5; punctured wound 1; lupus 3; burn 1; sinus 2; ulcer 4; scald 1; idiopathic 5.

Previous attacks in 2; relapse in 1 case.

*Fatal case*.—Male, æt. 48. Ill 1 week; attributed to catching cold. Shivering fits and swelling in axilla same time. Abrasion on dorsum of left thumb. Erysipelas of left arm and shoulder, rapidly spreading over chest and abdomen. Axillary and subpectoral abscess. Incisions. Left pleura three parts full of pus. Aspirated twice. Gradually sank. P.M.—Communication between left pleural cavity and abscess in axilla.

### SYPHILIS.

*Primary*.—Males 2, females 1. C. 3.

Two males with phagedænic sores; one the subject of old syphilis, the present being apparently a second attack of primary syphilis. The ulceration extended into the urethra and destroyed nearly the whole of the glans. No other sign of primary syphilis. In the other case the glans had ulcerated through the prepuce. One female with primary sore on skin of posterior part of right labium. Roseolous rash appeared after admission.

*Secondary*.—Males 2, females 35. C. 33, R. 3, D. 1.

Condylomata of external genitals 16; of tonsils 2; of external auditory meatus 1 (double); of anus 1. Congestion of fauces 12. Ulceration of fauces 2; of tonsils 3; of palate and mouth 2; of tongue 1. Sores on external genitals 14. General induration of glands 8; of neck and inguinal regions 5; of inguinal regions 10; of neck 1; of occipital regions 2. Roseolous rash in 5; papular in 8; squamous 2; macular and squamous 1; macular and papular 2; papular and squamous 2. Vaginal discharge in 5; loss of hair in 3.

One male with primary sore on each cheek, noted 6 weeks and attributed to fighting. Large mass of glands in front of each ear, and on both sides of neck.

General roseolous rash. Throat congested. Two small soft sores on prepuce. Glands in groin enlarged. Refused to stay in hospital.

*Complications.*—Salivation in two. Absence of uterus and small vagina with vaginal hernia in 1. Phimosis 1. Warts 2. Gonorrhœa 1. Fissures of anus 2. Abortion 1 (fatal case).

*Fatal case.*—Female, æt. 21. Pregnant 4 months. Rash 4 months ago. Has been treated at home with mercury. Mouth sore 2 months. On admission very anæmic. Macular and papular rash over whole body. General glandular enlargement. Extensive ulcerative stomatitis (? mercurial). Ring of mucous tubercles at anus. Treated with tonics and inunction of mercury once daily, under which treatment patient improved, but relapsed again. Much abdominal pain. Aborted, 23 days after admission, fœtus about five months. No signs of syphilis. Gradually sank and died 3 days after abortion. P.M.—Small intestine healthy. Large intestine from cæcum to anus covered with dark circular and oval raised patches from size of pin's head to one inch in diameter. Each contained a central slough, adherent. Rest of mucous membrane dark in colour. Patch of adherent placenta in uterus. Chemical examination of coats of large bowel showed them to contain a fair trace of mercury.

*Tertiary.*—Males 7, females 6. C. 12, R. 1.

Periostitis of clavicle and gumma of neck in 1. Tertiary ulceration of foot 1; thigh 1; general 2 (perforation of palate in 1); palate and pharynx 2; face and nose 1. Gumma of nose 1; neck 1; loin 1; thigh 1. Rupia of scalp and trunk 1.

#### TETANUS (not admitted as such).

Males 2. C. 1, D. 1.

1. Male, æt. 41, police constable. A few days before admission patient's horse fell into a ditch with him, and on trying to get out fell upon him three times. His right fifth finger was crushed by one of the hoofs. On admission several fractured ribs. Right fifth finger in state of gangrene, hand red and swollen, no fracture. Treated for 11 days with boracic arm bath, and condition much improved. Stiffness of jaw first noted on 11th day after admission. Finger at once amputated at metacarpo-phalangeal joint. Spasms commenced 10 days after the amputation, starting in face and extending to limbs and trunk, usually five to fifteen during 24 hours. Became delirious, and remained more or less so for 3 weeks, after which he gradually recovered. Risus sardonicus well marked, and remained for many days after cessation of delirium and spasms. Took a fair quantity of fluid nourishment throughout. Treated with chloral hydrate. Temperature only once reached 100·6°, usually normal or subnormal. Left hospital cured in 58 days.

2. Male, æt. 5. Knocked down by light two-wheeled cart on day of admission, one wheel said to have passed over his head. On admission large scalp wound on right side of head, exposing bare parietal and frontal bones over an area size of palm of hand. Flap very dirty, mud being ground into the soft tissues, and bone extensively contused. Wound treated antiseptically, counter-opening made at most dependent part, and drainage-tube inserted. Wound sutured with cat-gut, and dressed with iodoform. Wound suppurated, and dressings were changed to warm boracic on the 3rd day. On the 11th day child was noted to hold his



head in a very stiff manner, and to have great difficulty in swallowing; face cyanosed, also frequent spasms, commencing by tight closure of the teeth, and extending to whole of trunk and extremities, respiration ceasing during the more severe spasms. Patient removed to a small ward, and chloroform watch appointed. Spasms yielded to a small quantity of chloroform. Artificial respiration had to be performed frequently. Nutrient enemata, containing chloral hydrate, administered. Spasms became more severe, and child died during one, 27 hours after commencement of symptoms. There were 46 spasms in all. P.M.—Bare area of parietal bone about two inches in diameter. No other injury. Collapse of base of each lung. Other organs apparently healthy. No change detected in nervous system.

## LOCAL DISEASES.

### TUMOURS.

#### *Carcinomata—*

*Scirrhus of breast.*—Females 29. C, 23, U. 4, D. 2. Right, 13, left 16. Axillary glands involved in 22. Average duration before admission in 26 cases was 9 months, extremes being 3 weeks and 4 years. Durations of other three cases were 14, 17, and 30 years respectively. Married 22; single 7. Hereditary history of cancer in 5; of phthisis in 3; of both in 1. In 3 cases there was a history of trauma, and in 1 pressure of stays. Previous abscesses of breast in 1. One noted after a miscarriage. Eczema of the nipple in 2; discharge from the nipple in 4.

In one case of scirrhus nodule of right breast the axillary glands had been removed 3 years previously for scirrhus, which was apparently primary in the glands, the breast at that time being normal. Nodule in breast noted 8 weeks, with occasional discharge from the nipple.

*Treatment.*—In 19 the breast was removed and the axilla cleared out; in 6 the breast only was removed; in 2 no operation on account of the extent of the growth; 1 refused operation; 1 transferred for operation to the Home.

*Complications.*—3 cases cystic; 1 fungating; 1 ulcerating; 1 atrophic; erysipelas 1; septicæmia 1 (fatal case).

#### *Fatal cases.*

1. Female, æt. 49, married. Family history of phthisis and (?) cancer. Abscess of left breast 23, and 5 years ago. Noted lump in left breast 5 weeks, and a second one 1 week. On examination, hard freely movable tumour 2 by 2 inches in upper part of breast, with a second much smaller one below it. Scars over tumour. Axillary glands enlarged, also supra-clavicular slightly. Whole breast removed and axilla cleared out. Drainage-tube and iodoform dressings. Stitches all cut through and wound gaped. Thirteen days after operation wound became dry and unhealthy. Temperature rose to 104°. Condition much the same up to time of death, 22 days after operation. Delirium for last few days. Temperature just before death rose to 108.6°. P.M.—Congestion and œdema of lungs.

Abdominal viscera soft, enlarged, and congested. No secondary abscesses. (Septicæmia.)

2. Female, æt. 42. Lump noted in left breast 6 months. On examination a large mass, 3 by 3 inches, in upper and outer part of left breast, very adherent deeply, but skin movable over it. Nipple retracted. Enlarged glands in axilla. Whole breast removed and greater part of pectoralis major, which was infiltrated. Axilla cleared out, but all could not be removed owing to deep connections. Drainage-tubes and iodoform dressings. On following day temperature rose to  $102.4^{\circ}$ , and remained between  $99^{\circ}$  and  $103.2^{\circ}$  till 12th day after operation, when it rose to  $105.4^{\circ}$ , and erysipelas started from the wound. Died 17 days after operation, rash having spread over most of chest. P.M.—All organs decomposed;  $1\frac{1}{2}$  pints of fluid blood in right pleura, recent lymph in left. A few nodules of new growth in lower lobes of lungs; many in liver, the largest being size of an orange.

*Recurrent growth in breast.*—Females 19. C. 15, R. 1, U. 3. Recurrences occurring in  $1\frac{1}{4}$ , 3,  $3\frac{1}{2}$ , 4, 4, 5, 5, 8, 9, 9, 13, 15, and 17 months, and 2, 5, and 12 years respectively after operations. Three cases of second recurrence in  $2\frac{1}{2}$  and  $6\frac{1}{2}$  months and  $2\frac{1}{2}$  years. In or near scar, and also in axilla, in 14; in scar only in 1; in nipple in 1; in axilla only in 3.

Operation in 16 cases; 3 too far advanced for removal.

Supra-clavicular glands enlarged in 3 cases.

Erysipelas in female æt. 73, starting on 20th day after operation from nearly healed wound.

*Of hard palate.*—Females 2. C. 1, U. 1.

1. Female, æt. 22. Considerably deformed by rickets in lower extremities. Tumour of palate noted 4 years. Left half of hard palate occupied by semi-solid tumour, size of small egg. Alveolus expanded and displaced outwards. Ulcer on surface of tumour, with small slough, the result of an exploratory incision before admission. No enlarged glands. Preliminary laryngotomy and excision of left superior maxilla. Antrum full of soft new growth. Microscopic examination of growth left some doubt as to whether it was a carcinoma or adenoma; it contained columns of distinctly columnar-celled epithelium. No recurrence 5 months after operation, when patient was readmitted for removal of several typical pedunculated nasal polypi from top of cavity left by removal of jaw.

2. Female, æt. 64.—Ulcer of palate noted 3 months. On examination ulcer involving posterior part of right side of palate, extending on to alveolar process. Edges thick, hard, and everted. Enlarged glands behind angle of jaw. Refused treatment.

*Of œsophagus.*—Male, æt. 38 (transferred from Medical Ward). Died. Dysphagia 7 months; loss of flesh. Stricture  $9\frac{1}{2}$  inches from teeth, admitted bougie equal to No. 5 English catheter. Gradually dilated for 8 weeks up to size equal to No. 19. In spite of passage of bougies stricture contracted again, and obstruction became complete. Gastrostomy 83 days after admission, incision parallel to costal margin. Stomach opened, and fixed to abdominal wall by means of 7 double sutures, each attached to a small bone plate (in stomach). Free edge of stomach also sutured to margin of abdominal wound. Gradually sank, and died 13 days after operation. P.M.—Walls of œsophagus infiltrated

with firm white growth for 4 inches, commencing 2 inches below cricoid, adherent behind to vertebræ. Calibre of œsophagus size of No. 8 catheter at upper part of growth. Growth extended on anterior wall nearly to stomach. Nodule of new growth in mucous membrane of stomach close to cardiac orifice. Stomach firmly adherent to abdominal wall. Opening in it midway between orifices, and close to great curvature. A few small white nodules in liver and spleen.

*Of pylorus.*—Female, æt. 31 (transferred from Medical Ward). Vomiting of coffee-coloured fluid 3 months; loss of flesh 10 months. Noticed movable lump in region of stomach quite recently. On examination rounded, movable, hard tumour just above and to right of umbilicus. Stomach dilated. Gastro-jejunostomy day of transfer. Median incision. Circumscribed, hard, nodular mass surrounding pylorus. No adhesion. No enlarged glands. Stomach opened near great curvature and washed out. Jejunum opened about three inches from its commencement. Senn's oval bone plates used, and jejunum fixed to stomach without difficulty. Lembert's sutures introduced all round after approximation of plates. Operation  $1\frac{1}{2}$  hours. Death from exhaustion 12 hours later. Complete post mortem refused. Stomach and jejunum removed. No leakage. Some adhesions between stomach and jejunum. Water passed readily from stomach into intestine, but not in opposite direction. Pyloric orifice almost completely obliterated by firm contracting growth admitting only a small probe.

*Of colon.*—Male, æt. 22 (transferred from Medical Ward). Pain and vomiting, with alternating constipation and diarrhœa, for 9 months. Laparotomy in mid-line. Mass of growth felt in hepatic flexure, which was bound down by adhesions. Wound closed, and right inguinal colotomy performed. Gradually sank, and died on 3rd day after operation. P.M.—No peritonitis. Hepatic flexure the seat of an infiltrating new growth involving whole circumference of gut, adherent especially to gall-bladder and stomach close to pylorus, where there was a fistulous communication between stomach and hepatic flexure. Transverse colon had been opened in right groin 6 inches below the obstruction.

*Of rectum.*—Males 7, females 5. C. 1, R. 3, U. 6. D. 2. Hereditary history in 1 case. Duration 4, 5, 6, 6, 7, 9, and 10 months and 2, 2, 2, 2, and 3 years respectively. Position  $1\frac{1}{2}$ ,  $1\frac{1}{2}$ , 2,  $3\frac{1}{2}$ , 4, 4, 5, 5, and 7 inches above anus respectively. Recto-vaginal septum involved in 1 case (recurrent).

*Treatment.*—Excision of lower 3 inches of rectum 1; discharged in 33 days, wound not quite healed and control over evacuations not complete. Left inguinal colotomy in 4; all done in two stages, bowel opened 3, 5, 7, and 9 days respectively after operation, and one not stated. In one case the bowel was previously punctured to relieve distension. Left lumbar colotomy in 1. Refused operation 3—1 recurrent after partial excision 2 years previously. Too extensive for operation 3—1 recurrent after excision 12 months previously, recto-vaginal septum involved.

#### *Fatal cases.*

1. Male, æt. 56. Refused treatment when in hospital on August 9th. Re-admitted for pain in epigastrium. Hard lobulated mass obstructing lumen of bowel  $1\frac{1}{2}$  inches from anus. Trace of albumen in urine. Left inguinal colotomy 4 days after admission. Glass tube passed through mesocolon, and no sutures used to fix colon, which was opened 9 days later. Five days after this, passed

half a pint of dark blood from upper opening in bowel, and became collapsed. Constant oozing for 2 days, when patient died collapsed. P.M.—Stomach contained much reddish liquid blood and clot. Mucous membrane covered with mucus; no ulceration. Small intestine distended and contained reddish blood. Large intestine collapsed, and contained dark blood just above colotomy opening. Extensive ulceration of upper 6 inches of rectum, with scattered raised patches of growth. Lower 2 inches normal. Secondary nodules in liver and left kidney.

2. Female, æt. 67. Diarrhœa 6 months, hæmorrhage 6 weeks. High up in rectum can be felt a conical mass protruding into lumen of bowel. No ulceration. Seven days after admission incision in left inguinal region with view to possible removal. Patient too collapsed for long operation, so colon was sutured to wound and opened a few days later. Progress good till 17th day, when temperature rose to 104°, and patient complained of faintness. Died next day. P.M.—Oval ulcer on anterior rectal wall 7 inches from anus. Wall of rectum infiltrated. Aortic regurgitation, valves covered with rigid calcareous plates. Left ventricle hypertrophied.

*Of vagina.*—Female, æt. 33. Six weeks history. Large ulcer, with hard everted edges, involving nearly whole of posterior vaginal wall. Too extensive for treatment.

*Of bladder.*—Female, æt. 64. Abdominal pain and incontinence of urine 11 months, hæmaturia 4 months. Urethra dilated and bladder examined with finger. Sessile growth felt on floor, portions removed with forceps and curette. Microscopic examination proved growth to be soft carcinoma. Gradually sank, and died 11 days later. P.M.—Mass of new growth breaking down in centre, situated between rectum and bladder, and invading base of the latter. Anterior surface of bladder adherent to back of pubes. Small sacculus from left side. Intense cystitis. Both kidneys affected with interstitial nephritis. Pneumonia of right lung.

*Malignant tumours of face.*—Females 2. U. 2.

1. Female, æt. 57. Three years history. Removed three times in Richmond Hospital. Now mass of firm new growth occupying right side of face and upper lip. Ulcer on inner surface of cheek. Mass of glands under jaw. Too extensive for removal.

2. Female, æt. 53. Three months history. Conical tumour of right cheek, semi-solid; fungating at apex, the site of an incision. No glands. Too extensive for removal.

*Of parotid.*—Male, æt. 58. Tumour first noted in front of left ear 40 years ago; gradually increased last 18 months. Partial removal 9 months ago. Left facial paralysis 11 months. Now hard mass size of egg in left parotid region very deeply connected. Too extensive for operation.

*Of neck.*—Males 2. U. 2.

1. Male, æt. 12. Painful swelling 8 months. Incised in London Hospital 4 months ago. Much emaciation. Tumour just below left ear very hard and infiltrating. Too extensive for operation.

2. Male, æt. 62. Tumour 12 months; increasing rapidly last 5 weeks. Large, slightly movable, hard nodular mass in right submaxillary region. Subject of Bright's disease, so no operation advised.



*Of axilla and lung.*—Male, æt. 45. Tertiary syphilitic ulceration all over body. Sloughing mass in left axilla. Incision. Died suddenly. P.M.—Half a pint of serous fluid in pericardium. Firm adhesions of both pleuræ. New growth, involving anterior mediastinal and bronchial glands, chiefly left. Large mass of malignant glands in left axilla. Much new growth in left lung and lower lobe of right. Small mass of new growth on anterior surface of left ventricle of heart.

*Of omentum.*—Female, æt. 48. Lump noted in right side of abdomen 6 months. On examination movable lump size of fist, probably connected with omentum. No symptoms. Not suitable for operation.

*Of liver.*—Female, æt. 24 (transferred from Medical Ward). Swelling of abdomen, jaundice, and constipation 3 months. On examination large tumour occupying upper half of abdominal cavity, with two hemispherical projections, (?) fluctuating. Exploratory incision. Liver found to be uniformly enlarged, bleeding readily on manipulation. On surface opaque yellowish spots of (?) new growth. Left hospital no worse for examination in 1½ days.

*Obstruction to common bile-duct by new growth.*—Male, æt. 38 (transferred from Medical Ward). Pain over liver 5 months, jaundice 4 months. On examination globular enlargement over site of gall-bladder. Laparotomy in mid-line, gall-bladder felt distended, and hard mass in situation of common duct. Second incision over gall-bladder, which was very tense and could not be drawn out of wound, so was left to form adhesions. Opened 3 days later and interior explored; nothing detected. Eighteen days later median abdominal incision reopened; hard mass of new growth felt surrounding common bile-duct and extending up to its junction with the hepatic duct. The intestine was very adherent to scar, and was torn slightly; rent sutured. Fæcal fistula formed, and then gradually closed. On discharge jaundice slightly less. Small fæcal fistula in mid-line.

#### *Epithelioma—*

*Lower lip.*—Males 3. C. 2, U. 1. Duration 3 months, 5 and 11 years. History of injury in 1. Two were smokers. Enlarged glands in 1. Excision in 2; refused operation 1.

*Tongue.*—Males 17. C. 7, R. 2, U. 7, D. 1. Duration 1, 2, 2, 2, 3, 3, 3, 3, 4, and 5 months, and 1, 2, 4, and 7 years respectively. Two cases recurrent after 3½ months and 2 years respectively. In no case any history of heredity; in 3 cases a history of syphilis. Six only noted as being smokers. Extensive leucoplakia in 5. Glands enlarged in 7 primary and 1 recurrent case. Floor of mouth involved in 3, and tonsil in 1 primary case. Floor of mouth involved in 1 secondary case. Stricture of urethra in 1 case; internal urethrotomy performed, refused operation on tongue.

*Treatment.*—Complete removal of tongue in 1; half tongue removed in 6; less than half in 1; tonsil removed with half tongue in 1, in which recurrence took place in tonsil before discharge; glands removed in 2; preliminary ligature of linguæ in 2; preliminary tracheotomy 1; laryngotomy 1. Two refused operation, and 7 were too extensive. In every case operated upon tongue was removed through mouth with scissors. Cheek was divided in 1 case.

*Fatal case.*—Male, æt. 53. Recurrent growth in scar noted 18 months. Primary growth removed 2 years previously, with anterior two thirds of tongue.



**Tracheotomy.** Isthmus of thyroid divided and a portion removed, as it was large and in the way. Sponge placed in pharynx. Left cheek divided horizontally back to ramus of jaw. Remains of tongue removed, well back, with scissors. Very little hæmorrhage during operation. After its completion, however, venous hæmorrhage took place from pharynx, welling up into mouth at intervals. No vessel could be found. Pharynx plugged, and tracheotomy tube left in. No further hæmorrhage took place, but patient died in 5 hours, apparently from shock due to the prolonged operation. No P.M.

**Floor of mouth.**—Males 3. Readmission 1. All too extensive for operation; glands enlarged and jaw involved in all.

**Tonsil.**—Males 3. All too extensive for operation. Duration 1, 1, and 5 months. Glands enlarged in all. Tongue and soft palate involved in 1; jaw, tongue, palate, and pharynx in 8; jaw and tongue in 1; preliminary laryngotomy, division of cheek, and examination of one case, which was found to be too extensive for removal.

**Mucous membrane of cheek.**—Male, æt. 43. History of syphilis, and extensive smoking for 23 years. Sore noted 8 months, and lumps under jaw 4 months. On examination all upper overlap lower teeth; second left bicuspid especially prominent, projecting into cheek. Nearly whole of inner surface of left cheek occupied by indurated ulcer, with hard, raised edges, not involving skin nor jaws, but extending slightly on to lips. Large mass of glands below, and adherent to jaw. Cheek divided and ulcer removed; glands dissected out. Healing by first intention.

**Face.**—Male, æt. 75. Secondary ulcerating tumour in front of left ear 4 months. Primary epithelioma removed 2 years previously from left cheek. Secondary growth extended into parotid gland, and facial nerve was implicated, and dissected out. Impossible to remove whole of growth.

**Larynx.**—Male, æt. 60. Loss of voice 2 years; dyspnœa on exertion. Only small opening between cords. No ulceration. Growth above cords. Tracheotomy gave much relief.

**Neck.**—Male, æt. 57.—Nodulated tumour in skin of right side of neck, freely movable. Two months history, started in pimple. Excision, with two apparently healthy glands situated just below it.

**Submaxillary glands.**—Males 2. C. 2. Both after removal of epithelioma of lower lip. Primary growth removed 2 months and 2½ years respectively. Second recurrence in gland 1. Both removed.

**Scar.**—Male, æt. 50. Necrosis of right tibia 13 years, with sinus. Papillomatous growth noted 1 year. Glands in groin enlarged. Gritti's amputation.

**Heel.**—Male, æt. 45. Noted 18 months. Large foul ulcer with hard everted edges, occupying whole of left heel. Glands in groin enlarged. Mikulicz's operation; good result.

**Toe.**—Male, æt. 55. Corn on fifth right toe 2 years. Commenced to fungate 18 months ago. Glands in groin noted 2 months, and broke down 1 month ago. Amputation of fourth and fifth toes, with heads of metatarsal bones. Fungating mass in groin scraped.

• **Penis.**—Male, æt. 64. Six months history. Congenital phimosis. Papillo-

matous growth fungating through left side of prepuce, surrounded by a deep ulcer. Inguinal glands enlarged. Refused treatment.

*Humerus.*—Female, æt. 53. Left lumbar colotomy performed 10 months previously for carcinoma of rectum. Weakness of right arm 4 months, and 3 months ago felt it give way with a snap while at work. Admitted for spontaneous fracture. Firm fusiform swelling of upper half of right humerus. Fracture at junction of upper and middle thirds; crepitus. Shoulder-joint normal. No enlarged glands. Fourteen days after admission amputation at shoulder-joint after preliminary ligature of axillary, as high up as it could be reached from axilla. Left hospital 21 days after operation; stump healed. Microscopic examination of section of tumour shows it to be a typical columnar-celled epithelioma. Seen 8 months after discharge, when she had a new growth in the thyroid gland.

*Rodent ulcer.*—Male 1, females 2. C. 1, R. 1, U. 1.

1. Male, æt. 47. Commenced as small pimple on forehead 5 years ago. No enlarged glands. Excised.

2. Female, æt. 59. Twelve years history, attributed to friction of clothes. On examination extensive deep ulcer, with slightly raised tuberculated edges, in sulcus between right thigh and labium. No glandular enlargement. A portion examined microscopically proved it to be typical rodent ulcer. Refused operation.

3. Female, æt. 51. Recurrent, of right side of face and superior maxilla. Primary growth removed from junction of ala nasi and cheek 9 years ago. Recurrence noted 2 months. Anterior part of superior maxilla invaded. No glandular enlargement. Excision of growth, with portion of superior maxilla. Microscopic examination proved it to be rodent ulcer.

*Sarcoma*—

(a) *Recurrent, of breast.*—Female, æt. 43. Readmitted twice. Primary growth removed, with right breast, 14 months previously. Secondary growths removed 7, 10, 11, 12, and 13 months later respectively. On discharge no sign of recurrence.

(b) *Testicle.*—Male, æt. 33. Noted 5 years, gradually increasing. On examination right testicle size of small cocoanut, hard, heavy, and oval in shape. Smooth on surface. Thickening extended up cord into inguinal canal. No testicular sensation. Castration. Peritoneal cavity opened in removing upper limit of growth in the cord, which extended into the abdominal cavity. Peritoneum sutured, whole of growth removed. Healed by first intention, without a bad symptom. On microscopic examination tumour proved to be a large round-celled sarcoma.

(c) *Kidney.*—Female, æt. 1½. Swelling in left loin noted 1 week. Developed scarlet fever 16 days after admission, transferred to medical ward and died. P.M.—Sarcoma of left kidney, which was size of small cocoanut and encapsuled.

(d) *Bones.*—Males 4, females 5. C. 5, R. 2, U. 2. Heredity traced in none. History of injury in 1. Enlarged glands in 2 cases. Upper jaw 4 (Myeloid 1, recurrent spindle-celled 1; undetermined 2); lower jaw 1 (myeloid); sternum 1 (recurrent spindle-celled); radius 1 (central myeloid); femur 2 (central myeloid 1, ossifying spindle-celled 1).

*Treatment.*—Partial excision of upper jaw in 1; removal of recurrent growth 1; removal of myeloid epulis lower jaw 1; scraping, cautery, and zinc paste to recurrence of sternum; excision of lower ends of radius and ulna 1; amputation at hip-joint 1; amputation in middle third of thigh 1. Unfit for operation 2.

(e) *Glands.*—Male, æt. 56. Infiltrating mass right side of neck 15 months. Has been twice incised. Portion examined and found to be round-celled sarcoma. Too extensive for operation.

(f) Males 2. C. 1, D. 1. Male, æt. 36. Pedunculated tumour size of egg at flexure of right elbow noted several years. No enlarged glands. Excised. On microscopic examination mixed-celled sarcoma with many hæmorrhages in its substance.

*Fatal case.*—Male, æt. 23. Lump in right groin noted 6 months. Gradual emaciation for same time. On examination darkly pigmented mole on inner side of right leg, just above malleolus, size of a shilling; said to have been present since birth, but has increased in size lately. Large mass of indurated glands in groin. A mass also felt deeply in iliac fossa. Numerous subcutaneous nodules, varying in size from a pea to a hazel-nut, all over the trunk, arms, and thighs, some bluish in colour. Hæmorrhage from rectum has taken place when bowels have acted. Tenderness over lumbar spine. Left at own request.

*Simple tumours—*

(a) *Lipomata.*—Males 1, females 11. C. 11, U. 1. Situation: Arms 1: shoulder 1; neck 1; chest 1; back 4; buttock 1; loin 1. Fibro-lipomata of buttock and arm 1; diffuse lipoma of inner side of each knee 1. All excised except in 1 female, too fat and bronchitic for operation. One knee only operated upon in the diffuse lipoma. Crucial incision; over 2 lbs. of fat, with some skin, removed. Wound suppurated and gaped; healed by granulation; good result.

(b) *Fibromata.*—Females 2. C. 2. Right hypothenar eminence 1, probably connected with palmar fascia; excised. Right temporal region 1, hard globular tumour about 1 inch in diameter, firmly attached to periosteum just behind and above right ear. Removed with a scale of bone. Microscopic examination proved it to be a very dense fibroma.

(c) *Polypi.*—Males 5, females 2. C. 6, D. 1. Nose 4; ear 1; naso-pharynx 1; rectum 1. Nasal and naso-pharyngeal all recurrent.

*Fatal case.*—Female, æt. 55. Nostrils blocked off and on for 10 years. Had polypi removed with snare several times. On examination multiple small polypi blocking each nostril. Cured under chloroform. Next day ecchymosis of right eyelids and temp.  $101^{\circ}8'$ . On 2nd day temp.  $105^{\circ}4'$ , frontal headache, and drowsiness. Remained in same condition 2 days. Died on 5th day; temperature before death  $106^{\circ}4'$  and after death  $107^{\circ}4'$ . Never any vomiting nor paralysis. P.M.—Dura mater separated from orbital plates by thin layer of pus. Cribiform plate completely destroyed, crista galli remaining intact. Superior and middle turbinated bones missing, probe passing into orbit on each side from nose. This destruction of bone evidently antecedent to operation, as the remaining edges were black, crumbling, and carious. Further than this, a small portion of polypoid tissue was firmly adherent to the under surface of the dura mater where it originally overlay the cribiform plate. Frontal lobes of brain • firmly adherent to membranes over site of cribiform plate. No ear disease.

(d) *Myxo-fibroma of cervical nerves*.—Female, æt. 43. Small lump above left clavicle and shooting pains in hand about 14 years. Lump gradually increasing. For 4 years shooting pains down left arm. On examination firm tumour size of small egg immediately above outer part left clavicle and apparently connected with nerve-roots. Tingling sensation on outer side of back of forearm and back of thumb and index finger. Excised and found to be encapsuled, strands of nerve passing over its surface, and a large nerve-trunk behind. Left hospital 10 days after operation, having lost all previous symptoms.

(e) *Nævi*.—Males 2, females 4. C. 4, D. 2. Situation: back of hand 1; left arm 1; abdominal wall 1; forearm 1; shoulder and chest 1; neck 1. All excised except the one of shoulder and chest, which was too extensive.

*Fatal cases.*

1. Male, æt. 1 day. Small, unhealthy infant, cyanosed. Large swelling surrounding upper part of left arm and extending on to front of chest as far as nipple and back nearly to spine. Tumour bluish in colour and elastic to feel. Child gradually wasted, and died in 2 months. P.M.—Growth nævoid in character, with large proportion of connective tissue. It extended through pectoralis major, and was adherent to ribs from second to sixth. Consolidation of lower and middle lobes of right lung. Other organs healthy.

2. Female, æt. 13 months. Swelling noted since 2 months of age in right submaxillary region, gradually increasing. On examination large deep venous nævus. Excised 7 days after admission; connections found to be very deep, being attached to carotid sheath and wall of pharynx. Operation a long one, not much loss of blood. Died on 2nd day, never having recovered from the shock of the operation. P.M.—Organs healthy.

(f) *Adenomata*.—Females 6, C. 6. All of breast. Ages 18, 19, 20, 21, 35, and 37 years. Duration 6 weeks, 8 and 9 months, 1, 2, and 6 years respectively. Married 2; children 1. Family history of breast tumours, probably simple, in 1. History of injury in 1. One recurrent after 2 years, with an adenoma in opposite breast as well. All excised; 4 definitely encapsuled.

(g) *Exostoses*.—Males 4, females 2. C. 6. Ivory 1, of hard palate, removed with chisel. Spongy 2; lower end of femur, inner side, 1; head of fibula 1—both covered with layer of cartilage. Removed with chisel and bone forceps. Subungual 3, 1 recurrent. All removed.

(h) *Lymphadenoma*.—Males 2, females 1. C. 1, U. 1, D. 1.

1. Male, æt. 4. Rickety. Mass of glands size of closed fist extending from left clavicle to jaw, glands mostly distinct; noted 18 months. No other glandular enlargement. Liver and spleen not markedly enlarged. Excision of one large mass of many separate glands. On leaving hospital no glandular enlargement anywhere.

2. Male, æt. 3½. Mass of separate enlarged glands in left side of neck noted 2 years. Difficulty in breathing and much emaciation last 3 months. Some stridor when asleep. Abdominal pain. Gradually sank and died 3 days after admission. No P.M.

3. Female, æt. 12. General glandular enlargement noted 3 years. Liver and spleen much enlarged. No surgical treatment.



*Cysts—*

(a) *Dermoid*.—Males 3, females 3. C. 6. Outer angle of orbit 3; root of nose 1 (recurrent); below lobule of ear 1; supra-sternal notch 1. All excised.

(b) *Cystic testicle*.—Male, æt. 26. Eighteen months history. Tapped several times; salivated with mercury at Cork. No history nor sign of syphilis. On examination irregular cystic swelling size of duck's egg; some solid material at lower part. Cord normal. Castration. Tunica vaginalis contained a little clear fluid. A very delicate membrane-covered tumour, which was composed of three or four thin-walled cysts at upper part, the lower part being solid. (Museum.)

(c) *Congenital sacral*.—Female, æt. 3 days. Cystic tumour size of large orange situated between rectum and sacrum, projecting behind anus. No paralysis of limbs. Apparently no connection with spinal canal. No alteration during stay in hospital. Child too feeble for operation.

*(d) Ovarian. Females 4. C. 4.*

1. Female, æt. 47. Married, 4 children. Tumour noted 2 years. On examination cystic tumour of right ovary and (?) smaller one of left. Transferred to Adelaide.

2. Female, æt. 49. Married, 4 children. Catamenia ceased 21 years. Abdominal pain 1 year; swelling noted on right side 6 months. On examination abdomen distended, flanks bulged, some free fluid. Central tumour, extending 4 inches above umbilicus. Uterus  $2\frac{3}{4}$  inches, normal position. Median incision below umbilicus. Some ascites. Omentum adherent to front of cyst, which was tapped and then incised, as contents too thick to pass through canula. The pedicle, which was found to be twisted on its axis, was transfixed, ligatured with stout silk, cut off, and returned. The left ovary examined and found to contain 2 or 3 small cysts, and was surrounded by varicose veins. Abdomen sponged out and wound closed with silkworm gut. No drainage-tube. Boracic and mercurial dressings. Stitches removed on 8th day. Wound healed by first intention. Left hospital 51 days after operation, cured.

3. Female, æt. 18. Single. Catamenia commenced at 13; always regular (3 weeks). Said to have had attack of peritonitis 2 months ago, which came on suddenly while walking. Was in bed 3 weeks with swollen and tender abdomen, vomiting, and retention of urine. When recovering from this her doctor discovered a swelling in left iliac region. On examination uterus normal but displaced to right. Bladder also pushed over to right. An ill-defined, soft mass size of cocoanut to left side and in front of uterus, probably the thick wall of a ruptured ovarian cyst. Three weeks after admission median incision from pubes nearly to umbilicus, cyst tapped, and 12 oz. of dark grumous fluid drawn off. A few recent adhesions of cyst. Pedicle transfixed and ligatured with silk, stump returned. Peritoneal cavity sponged out. Wound closed with deep and superficial sutures. No drainage-tube. Dressings of iodoform and salicylic wool. Cyst wall  $\frac{1}{4}$  inch thick. No sign of any previous rupture. Stitches removed on 7th day. Highest temperature  $99^{\circ}8'$ . Left hospital cured 26 days after operation.

4. Female, æt. 56. Catamenia commenced at 17, regular. Menopause at 46. Abdominal discomfort for 18 months, flatulence, retching, and vomiting. Pains



in lower abdomen. On examination, freely movable fluctuating central tumour reaching midway between umbilicus and ensiform, pedicle extending into left side of pelvic cavity. Six days after admission median incision  $3\frac{1}{2}$  inches. Large left ovarian cyst and several smaller cysts, the former tapped and 90 ounces of fluid withdrawn. No adhesions. Pedicle transfixed and ligatured with silk. Continuous suture of peritoneum. Interrupted sutures to approximate edges of recti muscles. Skin sutured. No drainage-tube. Iodoform and salicylic wool dressings. Some sutures removed on 5th day, remainder on 9th. Wound healed by first intention. Highest temperature  $100\cdot2^{\circ}$ , one occasion only. Left hospital cured on 28th day after operation.

5. Female, æt. 65 (transferred from Medical Ward). Married twice; no miscarriages. Catamenia at 17; regular. Menopause at 50. Abdomen enlarging 2 years; pain 3 months. Left leg swollen off and on for 15 years. Umbilical hernia size of orange. For last few days constipation and frequent vomiting. On examination stout anæmic woman. Much abdominal distension, especially in front; flanks resonant. Median incision 4 inches. Large cyst tapped, and then a second one, before tumour could be drawn out. Fluid dark and thin, like altered blood. Pedicle found to be twisted twice on its own axis. Transfixed and ligatured with silk; pedicle returned. Left ovary also found to be cystic, and removed. Glass drainage-tube used and wound sutured with silk-worm gut. Cyanide and wood-wool dressings. Tube removed next day. Wound healed by first intention. Highest temperature  $100\cdot8^{\circ}$  (once only). Left hospital cured 25 days after operation.

*Broad ligament cyst*.—Female, æt. 22, single. Admitted to Medical Ward 2 months ago with pain in right side of abdomen, diarrhœa, and vomiting; transferred for operation. On examination rounded swelling in right iliac region size of orange, movable and apparently fluid. Median incision. Cyst very adherent, tapped and 4 oz. of dark fluid drawn off. Proved to be a cyst of right broad ligament which had become displaced to left side of pelvis and also twisted on its own axis. Tube encircled the base of the tumour; ovary separated by a slight constriction. Ovary, tube, and cyst removed together. Peritoneum washed out with boracic lotion. Glass drainage-tube used. Two days after operation abdominal pain, flatulence, slight brown vaginal discharge, and incontinence of urine. Next day frequent vomiting, pumping in character. Enema given and 4 doses of mag. sulph., each 2 oz., most of which, however, was again vomited. Condition remained much the same up to death on 6th day. Highest temperature  $101\cdot4^{\circ}$ . P.M.—General recent peritonitis, little effusion. Cut end of right Fallopian tube had slipped from under ligature of pedicle and was free in abdominal cavity. Uterus full of decomposing clot. Small cyst in left broad ligament. Liver large and in an advanced stage of fatty degeneration. Recent hæmorrhages in both lungs.

#### CIRCULATORY SYSTEM.

*Aneurysm*.—Males 4. C. 2, U. 1, D. 1.

*Right common carotid*.—Male, æt. 22. No history of any constitutional disease in patient or any of his family. Sore throat 8 weeks ago. Swelling in

right side of neck 4 weeks, gradually increasing. On examination fluctuating swelling, size of egg, beneath right sterno-mastoid, on level of thyroid cartilage, fairly movable. No pulsation. No enlarged glands elsewhere. Two days after admission sudden difficulty in breathing, which soon passed off. On day of operation, six days later, expansile pulsation was noted, and tumour was twice as large as on admission. Incision over swelling, which was punctured; blood-clot escaped. Swelling then laid freely open and clot turned out. Pressure being made on common carotid low down, it was ligatured just below the sac. Two artery forceps left on vessels at upper end, which could not be tied. Internal jugular vein tied below. No definite aneurysmal sac. Broken-down gland, substance found in the wound. Forceps removed on 5th day. Left hospital cured 28 days after operation.

*Right internal carotid.*—Male, *æt.* 31. Father died of “phthisis.” History of gonorrhœa and syphilis. Patient has been in the army most of his life. Swelling in right side of neck noted 1 month; rapidly increasing 1 week. Four days before admission suddenly became giddy and fell down. On examination large aneurysm, extending on right side of neck from angle of jaw to within  $1\frac{1}{2}$  inches of sternum. Pressure on common carotid diminishes pulsation but causes faintness, and on one occasion caused convulsions. No pulsation whatever to be felt in any artery of either upper extremity, but limbs warm. Arteries of lower extremities apparently normal. Systolic murmur at left base of heart. No thoracic aneurysm detected. Chest and scalp covered with old pigmented syphilitic scars. Nodes on both tibiæ, left humerus, and acromion. Right pupil larger than left, both active. Left hospital on fifth day, deciding not to submit to operation. Returned much worse 6 days later, aneurysm having increased slightly in size. Operation arranged for next day. Slept well and appeared easier next morning, but suddenly became semi-conscious, recovered slightly, but only to relapse again. Died same evening. P.M.—Recent hæmorrhagic infarct base of right lung, and smaller one in left. Heart large, pericardial sac obliterated. Gumma in wall of right auricle. Aorta uniformly thickened. Right subclavian extremely thickened for distance of  $\frac{3}{4}$  inch immediately outside origin of thyroid axis, lumen just admitting bullet probe. Axillary, brachial, and radial small and thin-walled. Left subclavian narrowed at origin, becoming quite impermeable  $\frac{3}{4}$  inch from aorta. Right common carotid small, and not diseased. External carotid nearly obliterated and practically incorporated in aneurysm of internal carotid, which was size of a hen’s egg, lined with layer of adherent clot extending up to base of skull, not affecting bifurcation of common carotid. Arteries of left side of neck narrowed, and lined by thin layer of clot. Brain and intra-cranial vessels normal.

*Right ileo-femoral.*—Male, *æt.* 38, painter. No history of any constitutional disease in patient or his family. No signs of syphilis in patient. No history of injury. Lead colic 12 years ago. Has long distances to walk. Noted a swelling in right groin 7 months ago, after a 6 mile walk in deep snow; gradually increasing since. On examination hour-glass-shaped aneurysm in right groin, constriction produced by Poupert’s ligament. Upper portion size of small egg, lower portion rather smaller. Œdema of limb. Pulsation in tibials weaker than on opposite side. Heart-sounds normal. Arteries generally thickened.

Ice-bag applied. Aneurysm slightly diminished in size. Patient refused operation and left hospital in 57 days. Relieved.

*Right popliteal.*—Male, æt. 31, engine driver. Family history of consumption. No history nor signs of syphilis. Gonorrhœa 7 years ago. Weakness of right leg 6 months. Swelling and pulsation behind knee 3 weeks. Saw a bone setter, who moved knee forcibly. On examination tense aneurysm in upper part of right popliteal space size of hen's egg. Edema of leg and foot. No pulsation in posterior tibial, but fairly good in anterior. Systolic murmur at apex of heart. Digital compression of femoral commenced 5 days after admission and continued for 96 hours without producing any marked change in aneurysm. Blister and small slough at seat of pressure. Ligature of femoral 11 days after cessation of compression. Silk ligature, and coats of vessel ruptured. Wound healed by first intention. Left hospital cured 33 days after operation. Leg in good condition; aneurysm half its original size, and solid. Feeble pulsation in tibials.

*Cirsoid aneurysm of scalp.*—Female, æt. 23, married. Father "gouty," mother suffers from "cancer." No history of syphilis nor injury. Swelling noted 9 months, increasing, especially last 2 months. On examination soft, pulsating, circular swelling 3 inches in diameter, and raised about half an inch from general surface of scalp. Situated over occipital protuberance, and extending more to left than to right. Large thin-walled vessels enter from all sides, especially from below in situation of occipitals. Bruit over tumour. After ligature of the largest vessels entering it the tumour was dissected out and found to be composed of large, thin-walled vessels, bound together by a little connective tissue. Wound healed by first intention, and patient left hospital cured 21 days after the operation. No return of pulsation.

*Dilated abdominal aorta.*—Male, æt. 32. One brother said to suffer in same way. Noted pulsation in abdomen for 1 year, but has suffered pain 3 years. On examination abdominal walls very lax. Aorta easily felt. Pulsation forcible, vessel (?) dilated.

*Varicose veins.*—Males 31, females 8. C. 37, U. 2. Lower extremity 38, right 17, left 15, double 6. Abdominal wall 1. Sixteen had been rejected for one of the public services.

*Treatment.*—Excision of portions of vein between two ligatures in 37 cases, of which 28 healed by first intention, 3 by granulation, and 6 suppurated. No operation in 1 with albuminuria and 1 with varicose veins of abdominal wall.

*Thrombosis.*—Females 4. C. 4. All of leg. Two probably due to anæmia; 1 following parturition, suppuration of thrombus; 1 (?) cause.

*Hæmorrhage.*—Males 3, females 1. C. 4. From varicose veins 3; after circumcision 1.

*Gangrene.*—Males 5, females 1. C. 4, U. 1, D. 1.

(a) *Finger.*—Male, æt. 38. Pain in right index finger 17 days. Gangrene 1 week, no apparent cause. Amputation at metacarpo-phalangeal joint.

(b) *Toe.*—Male, æt. 39. Numbness and change of colour in fifth right toe for 3 weeks. No injury. Urine contained large quantity of sugar. General condition very bad. Left hospital in 14 days, gangrene spreading to third and fourth toes.

(c) *Foot*.—Male, æt. 34. Always suffered from chilblains. Present condition started 4 months ago with chilblains all over toes of left foot. On examination thin, sallow man. Heart and urine normal. All toes of left foot gangrenous. Sloughy ulcer on dorsum, extending towards leg and slightly on to sole. Much pain in foot. Femoral artery pulsating, but popliteal cannot be felt. Circular amputation in lower third of thigh. Femoral and popliteal arteries found plugged with firm, adherent white clot. Left hospital cured 27 days after the amputation.

Male, æt. 22 (Raynaud's disease). History of scarlet and rheumatic fevers in childhood. Right leg amputated for gangrene of foot 12 months ago; 3 months ago great toe of left foot became swollen and blue. On examination left great toe in state of superficial gangrene, 3 next toes ulcerated extensively; extremely painful. Urine normal. Amputation in lower third of leg by lateral flaps 24 days after admission. Discharged cured 28 days after amputation.

Female, æt. 40, single (? embolic gangrene). Previously healthy. Three months ago experienced sudden feeling of loss of power in right side of body, with numbness, which gradually passed off. Four days ago, at end of 2 mile walk, right leg and arm suddenly failed her. On examination general swelling of right lower extremity, which is cold. Acute hyperæsthesia of leg and foot. Tenderness in line of femoral artery. Whole of foot and outer part of leg purple in colour, and colder than the rest of the limb. No pulsation in tibials, and feeble pulsation only in femoral. Heart and lungs normal. Trace of albumen in urine. Discoloration spread and pulsation in femoral ceased; a plug could be felt in the vessel. Amputation of thigh in lower third by anterior and posterior flaps 17 days after admission. Femoral artery filled with adherent clot. Left hospital cured 41 days after amputation, stump firmly healed. Readmitted 6 months later for pain in left leg. Nothing abnormal detected. Stump firm and healthy.

*Fatal case*.—Male, æt. 67. Sudden pain in, and coldness of, left foot 8 days, extending up leg. On examination anterior half of left foot cold and blue. Circulation very sluggish; tibials feebly pulsating. This condition becoming more marked and pulsation ceasing in tibials, thigh was amputated in lower third by anterior and posterior skin flaps on 18th day. Femoral artery found plugged with adherent clot. Flap became gangrenous and bone protruded; patient delirious, and gradually sank and died 16 days after amputation. No post mortem.

## DUCTLESS GLANDS.

Females 5. C. 5. All underwent operation.

### *Removal of one lobe of thyroid (4 cases)*—

1. Female, æt. 38, single. Housekeeper. Family history of "consumption." Alteration of voice and difficulty of breathing on exertion for two years. On examination uniform soft enlargement of thyroid. Median incision and removal of right lobe. Isthmus ligatured. Trachea only slightly compressed laterally. Drainage-tube used. Silk sutures and iodoform dressings. Tube removed on 2nd day. Wound healed by first intention. Lobe removed showed simple



hypertrophy. Left hospital 24 days after operation, with a small sinus in centre of wound. Voice improved and breathing easy.

2. Female, æt. 18, single. Family history of "cancer." One sister said to have had similar swelling in neck, which disappeared spontaneously. Patient has lived at Norwood and Tulse Hill all her life. Swelling noted for 4 years, increasing lately; also some dyspnœa when going upstairs. On examination large, soft, elastic bronchocele. Right lobe extending from angle of jaw to top of sternum, and slightly encroaching on mid-line. A depression is made out between right and left lobes, but no isthmus can be felt. Left lobe extends from top of sternum to ala of thyroid. Median incision. No isthmus. Right lobe excised, it being rather the larger and overlapping the trachea considerably. Trachea slightly compressed and pushed to left side. Drainage-tube used, and wound closed with continuous suture. Cyanide dressings. Tube removed on 2nd day and suture on 7th. Wound healed by first intention except at site of tube, where some suppuration took place. Left hospital 28 days after operation. Left lobe of thyroid had diminished considerably in size. Paralysis of right vocal cord.

3. Female, æt. 17, single. Lived all her life in London. One sister said to have had parenchymatous goître since birth. Patient has suffered from goître as long as she can remember. Swelling increases at menstrual periods. Subject to giddiness, and wakes up suddenly at night gasping for breath. Voice feeble. On examination smooth uniform enlargement of right lobe. Left lobe and isthmus enlarged and lobulated. Vertical median incision, enlarged at upper end by being continued upwards and outwards on left side. Isthmus ligatured on right side, and greater portion of it, together with left lobe, removed. Trachea keel-shaped, the anterior margin being quite sharp. Drainage-tube and iodoform dressings. Tube removed on 2nd day. Portion of thyroid removed was lobulated, 1 lobule only being cystic, the remainder simple hypertrophy. Left hospital 19 days after operation. All symptoms relieved. Right lobe much diminished in size.

4. Female, æt. 28, single (transferred from Medical Ward). Swelling noted for 6 years, pain for 18 months. Loss of voice off and on for 18 months. Some difficulty in swallowing, and shortness of breath on lying down. On examination very nervous woman. Firm lobulated swelling, size of hen's egg, in right lobe of thyroid. Trachea displaced to left. Left lobe and isthmus of thyroid normal. Slight exophthalmos. Rapid pulse. Frequent attacks of difficulty in breathing, lasting a few minutes, during which respiration is very noisy, but there is no stridor nor cyanosis. Attacks occasioned by any attempt at examination, when patient becomes very emotional. Incision over right lobe. Cyst opened. Gland very adherent to trachea. Isthmus ligatured, and right lobe dissected out. Sterno-thyroid divided in order to secure some bleeding points. Drainage-tube and cyanide dressings. Tube removed on 6th day. Wound healed by first intention. Left hospital 19 days after operation. All symptoms relieved. Paralysis of right vocal cord.

*Removal of encapsuled tumour.*—Female, æt. 38. Family history of "consumption." Born in London, and lived there 28 years. History 6 years; noted swelling 1 year after going to live on river's bank at Putney. Increasing difficulty in breathing 18 months. On examination whole of left lobe of thyroid



uniformly enlarged, smooth on surface, and moderately firm. Median incision. Muscles notched, to give more room. Capsule of gland incised and tumour readily shelled out with fingers. Encapsuled, oval, cystic adenoma; greatest circumference  $7\frac{1}{2}$ , least 6 inches. Drainage-tube used, and removed on 3rd day. Wound healed by first intention. Left hospital 15 days after operation. All symptoms relieved.

## DIGESTIVE SYSTEM.

### *Hernia* (see Special Table).

*Acute intestinal obstruction.* Males 2. C. 1, D. 1. Volvulus 1, band 1.

1. Male, æt.  $7\frac{1}{2}$ . Has always been subject to attacks of abdominal distension. Abdominal pain and distension 3 days. Vomiting and complete obstruction, in spite of enemata, for 2 days. On admission great distension of abdomen; resonant all over. Nothing detected per rectum. Spasmodic pain, causing child to double himself up and cry out. Abdominal section in mid-line, below umbilicus. Large intestine found greatly distended, small intestine collapsed, and pushed over to right side of abdominal cavity. Rectum also collapsed. Large intestine, which appeared to fill whole abdomen, was twice punctured with small trocar and canula, flatus escaping. Fine suture to close punctures in intestine. After this a soft tube could be passed per rectum into sigmoid colon, and large quantity of liquid feces, and oil, the result of previous enema, escaped. Obstruction, evidently of the nature of volvulus, was relieved. Wound healed by first intention, and child rapidly improved. Soft rectal tube passed several times during first few days after operation in order to relieve commencing distension. Left hospital cured 24 days after operation.

2. Male, æt. 28. Right inguinal hernia 8 years; irreducible 1 year. Twelve hours before admission attempted to reduce hernia, and partly succeeded. This was followed by great abdominal pain. Vomited several times. On admission symptoms of strangulation. No distension and very little tenderness of abdomen. No hernia down, but distinct thickening to outer side of right external abdominal ring, into which finger could be introduced and an impulse obtained. Incision over external ring. Sac opened, and found to contain omentum, with some adhesions. Fundus of sac bifurcated. A radical cure was performed, and a varicocele removed at same time. On next day vomiting had ceased, and abdomen flaccid. On 2nd day vomited once; abdomen a little distended and tender; suddenly became cyanosed, and died. P.M.—Dense fibrous band springing from mesentery close to cæcum, and attached to abdominal wall just above internal abdominal ring on the right side. Under this band, and tightly nipped by it, was a loop of small intestine 52 inches long, the lower end of the loop being 3 inches from the ilio-cæcal valve. Bowel quite black, and contained fluid blood.

*Chronic intestinal obstruction.*—Females 6. C. 2, R. 1, D. 3.

1. Female, æt. 53, widow, 8 children. No family history of cancer. Tenesmus for 3 to 4 years. Passes mucus and sometimes blood per rectum. Three weeks ago attack of sickness and pain. On examination hard ring-like mass, high up, almost completely surrounding rectum. No ulceration. Mass diminished with rest in bed. Discharged relieved in 22 days.

2. Female, æt. 61, widow. Has been an out-patient for 11 weeks with cancer of uterus. Partial obstruction 4 weeks, complete 1 week. On examination mass of new growth involving cervix uteri and posterior vaginal wall, pressing on rectum, but no ulceration of rectum felt. Abdomen greatly distended. Coils of intestine seen through abdominal wall. Left lumbar colotomy on day of admission, bowel sutured to skin and opened at once. General condition rapidly improved. Colotomy wound slightly enlarged 26 days later. Left hospital cured 42 days after operation.

3. Female, æt. 79, single (transferred from Medical Ward). No family history of cancer. Increasing difficulty of defæcation for several weeks, relieved by enemata. Complete obstruction 2 days, with vomiting. On examination abdomen distended considerably. Coils can be mapped out on abdominal wall. Nothing abnormal *per rectum*. First stage of left lumbar colotomy day of transfer. Bowel gave way at site of one of stitches on 2nd day; this opening was enlarged. Colotomy wound enlarged 56 days later. Discharged cured with colotomy plug in 66 days.

*Fatal cases.*

1. Female, æt. 52 (transferred from Medical Ward). One sister died from cancer, previously having had colotomy performed. Patient has noticed motions getting smaller for 2 months. Abdominal pain 1 week, and sickness 2 or 3 days. On admission emaciated woman. Much distended abdomen, distended coils mapped out on abdominal wall. Nothing abnormal *per rectum*. Left lumbar colotomy performed day of transfer. Colon opened at once, large quantity of fluid fæces and flatus escaping. Condition did not materially alter after the operation, and patient died on 2nd day from exhaustion. P.M.—7½ inches from anus was a deep, annular ulcer of rectum, edges formed of new growth, which infiltrated walls of bowel; gut moderately narrowed only, at that spot. Congestion and cedema of lower lobes of both lungs, with pneumonic consolidation of posterior border of right lower lobe.

2. Female, æt. 37 (transferred from Gynæcological Ward). Family history of cancer. Colicky abdominal pains 2 years, and traces of blood with motions. Worse since last confinement, 11 months ago. Was in Medical Ward 2 months ago for 14 days, with obstruction. Admitted to Gynæcological Ward supposed to have some pelvic tumour, but nothing definite found, and symptoms of obstruction increased. Exploration determined upon, but patient suddenly became collapsed, and did not rally sufficiently to allow of exploration; died 4 hours after transfer. P.M.—Colon much distended. Small intestine collapsed. Lower part of sigmoid flexure adherent to back of uterus and vagina. Sharp kink in bowel. Wall of bowel at adherent spot much thickened, and showed on its interior a typical malignant ulcer encircling the bowel, and a small ulcerated opening into the roof of vagina. No fæces in vagina. Secondary growths in liver.

3. Female, æt. 43 (transferred from Medical Ward). Operation for cancer of uterus 18 months ago. Gradually increasing obstruction for 2 or 3 months, total for 9 days. Vomiting several times daily for 7 weeks. On examination a mass of new growth felt in vaginal roof, also involving rectum. Day after transfer incision in left inguinal region. Small intestine found distended, and large collapsed. Coils of small intestine adherent to mass in pelvis. One coil

drawn out, sutured to wound, and then opened, allowing escape of fluid fæces. Symptoms relieved, but patient died from exhaustion 7 days later. No post mortem.

*Perforation of vermiform appendix.*—Male, æt. 9. Right inguinal hernia 2 years. Abdominal pain, constipation, and vomiting 3 days. Attempt made by doctor on day of admission to reduce the hernia under anæsthetic. On examination small tense swelling in situation of right inguinal ring. Abdomen tense and tender. General condition bad. Incision over swelling, sac opened and found to contain fæcal-smelling pus; finger passed into abdominal cavity. Median abdominal incision, below umbilicus. General suppurative peritonitis. Vermiform appendix felt, but transverse incision through right rectus muscle made to expose it thoroughly, when it was found to be size of 5th finger and to contain a concretion; ligatured as low down as possible and cut off, a second ligature applied to stump. Peritoneum washed out with boracic solution. A large glass drainage-tube put in abdominal wound, and a rubber one in the sac, in inguinal region. Rallied well after operation, and continued to improve for 24 hours, when discharge from wounds became offensive, and patient vomited frequently up till death on 3rd day. P.M.—General suppurative peritonitis. Ligature, about  $\frac{1}{4}$  inch from cut end of vermiform process, had cut through, allowing escape of fæcal matter into peritoneum. End of vermiform (stump) gangrenous.

*Artificial anus.*—Male, æt. 36. Excision of cæcum for chronic intussusception and malignant growth 2 months ago. Artificial anus formed, as patient was too bad for longer operation. Transferred to Surgical Ward for closure of artificial anus. Ends of gut dissected free, and circular enterorrhaphy performed with Senn's rubber ring. Fæcal fistula resulted on 7th day. Plastic operation to close fistula 47 days later was successful, and patient left hospital cured 49 days after plastic operation.

*Ulcerative colitis.*—Male, æt. 66 (transferred from Ophthalmic Ward, where he was a patient for cataract). Hæmorrhage from rectum 1 month ago, and not again till day of transfer, when he had a sudden severe attack. Tenderness in right iliac fossa. Nothing abnormal detected *per rectum*. First stage of left inguinal colotomy performed, a thin area of sigmoid, probably the base of an ulcer, fixed in the wound by glass rod passed through mesosigmoid. Gut gave way on 5th day, discharging some offensive pus. Died suddenly same day; no more hæmorrhage. P.M.—General, slight, early peritonitis. A few shallow, circular ulcers in cæcum, ascending and transverse colon, these portions of the large intestine being distended. At splenic flexure bowel became suddenly narrowed, and remained so to anus. Walls of this portion thickened. Extensive ulceration of sigmoid, producing a reticulated appearance. Largest ulcer 1 by  $1\frac{1}{2}$  inches, at point where sigmoid had opened. Rectum contracted but healthy.

*Intra-peritoneal abscess.*—Female, æt. 9 months. Flexion of right hip 6 days, some swelling over joint. Double Thomas's splint applied. Twenty-six days later a discharge of pus took place from rectum, and 5 days afterwards from umbilicus, which continued up till death, 66 days after admission. P.M.—No hip disease. Abscess between highest part of bladder and sigmoid, and anterior

abdominal wall; cavity communicated with sinus beneath psoas muscle. No communication traced with intestine. No disease of spine or pelvis.

*Fæcal fistula.*—Males 1, females 2. C. 1, U. 1, D. 1.

1. Male, æt. 17. Attack of "peritonitis" 12 months ago, resulting in an abscess, which burst in left loin and discharged fæcal matter 3 weeks later. On examination sinus situated just above centre of left iliac crest. Explored, and found to communicate with colon by an opening large enough to admit one finger. Wound washed out and closed, but broke down again. Left hospital in 45 days, condition unchanged.

2. Female, æt. 49. Fæcal fistula in right femoral region on and off for 17 years, result of a hernia. Treated with cautery. On discharge, 221 days after admission, fistula closed.

*Fatal case.*—Female, æt. 22. Admitted with fæcal fistulæ in right buttock and sacral region, the result of abscesses. Probe passed towards rectum. Finger in rectum detected a large hole in its right wall. Left lumbar colotomy performed 12 days after admission, and bowel opened 7 days later. Gradually sank, and died 54 days after admission. P.M.—Pelvic organs bound together by mass of inflammatory tissue. Extensive disease of pelvic surface of right ileum.

#### GENITO-URINARY SYSTEM.

*Gonorrhœa.*—Females 19. C. 19. Warts in 3; bubo in 1; labial abscess in 1; chancres in 2.

*Chancres.*—Males 7, females 9. C. 16. Sloughing in 4; phimosis 4; vaginal discharge in 3; warts 1; effusion into knee and shoulder 1. Treatment: Circumcision 4; prepuce slit up in 2; scraping 2; nitric acid applied in 2.

*Stricture.*—Males 27. C. 22, R. 4, D. 1. History of gonorrhœa in 23, denied in 3; traumatic 1. Situation; at or near bulb in 8; in penile portion in 7; in membranous portion in 2. Cystitis in 5; perinæal abscess in 2; enlarged prostate in 1; epididymitis in 2; abscess in tunica vaginalis in 1. Treatment: Continuous catheterisation in 17; interrupted catheterisation in 2; internal urethrotomy in 1; external urethrotomy in 1. Cock's puncture in 3.

*Fatal case.*—Male, æt. 31. No history of gonorrhœa or trauma. Symptoms of stricture 6 months, with passage of a little blood before micturition. Stricture  $5\frac{1}{2}$  inches from meatus; no instrument could be passed. Urine normal. Attack of retention for 12 hours, 9 days after admission; stricture still impassable. Cock's puncture 18 days after admission, tube tied in bladder. Next day rigor and temperature  $102^{\circ}$ . Hypogastric pain. Urine passed chiefly by side of tube. Two days later abdomen became tense and tender. Frequent vomiting. Incision made above pubes, setting free gas and urine. Tube inserted. Patient gradually sank. Temperature subnormal for last 24 hours. P.M.—Fibrous annular stricture  $5\frac{1}{2}$  inches from meatus. Bladder much thickened, and slightly fasciculated on inner surface. Membranous urethra opened in mid-line. Extravasation between bladder and pubes through opening in upper wall of membranous urethra. Slight pelvic peritonitis. General œdema of both lungs, with congestion of their bases. Two ounces of serum in each pleura. Old adhesions binding down vertebral border of each lung.



*Retention.*—Males 21. C. 14, R. 6, D. 1. Sixteen due to stricture of urethra. Eleven treated by catheterisation (in 4 of which the catheter was tied in); 2 relieved by hot bath, and refused further treatment; in 1 Cock's puncture, with division of the stricture from behind forwards. Internal urethrotomy 6 weeks later for a second stricture of the penile urethra. This case had previously had perineal puncture performed 4 years ago for (?) extravasation of urine. In 1 bladder aspirated above pubes, followed later by catheterisation. In 1 external urethrotomy for impassable stricture, retention being relieved for 3 weeks by hot baths, and no instrument could be passed. Rigors after catheterisation in 4 cases; cystitis in 2; meatus enlarged in 2. Three due to enlarged prostate; cystitis in 1; all relieved by catheter. One due to prostatic abscess; relieved by catheter, passage of which was followed by discharge of pus from urethra. One due to gonorrhœa; relieved by catheter.

*Fatal case.*—Male, æt. 34. Gonorrhœa 10 years ago. Symptoms of stricture 3 years; retention 15 hours. On admission bladder distended to within  $1\frac{1}{2}$  inches of umbilicus. Impassable stricture at bulb. Hot baths relieved the retention. Three days after admission stricture dilated up to No. 10 silver, which was tied in for 2 days. On 5th day rigors, vomiting, and temperature  $104^{\circ}$ , followed by abdominal pain and rigidity. On 7th day emphysematous swelling appeared, occupying whole of right buttock and outer side of thigh. Much pain. Dry tongue, and rapid, feeble pulse. Gradually sank. P.M.—Stricture 5 inches from meatus. False passage, apparently of old standing, commencing at level of stricture and running in roof and to right side of urethra for about 2 inches, opening into membranous urethra. Small false passage in floor of urethra 1 inch behind stricture. Bladder hypertrophied, and showed signs of old cystitis. Spleen enlarged. Much effused black blood in muscles of right buttock and upper part of thigh; origin not obvious. No connection traced with urethra.

*Extravasation.*—Males 5, C. 1, D. 4.

Male, æt. 44. Symptoms of stricture 4 years. Metal instruments passed at another hospital 2 days before admission; caused much bleeding. Swelling in perinæum noted same night. On admission bladder distended up to umbilicus. Tense swelling in perinæum, extending forwards to scrotum, which is very œdematous, and apparently infiltrated with urine. Catheter passed into recent false passage, causing free hæmorrhage. Median perineal incision, setting free urine, and incisions also in each half of scrotum. Catheter passed down urethra appeared in wound, end guided into urethra again, and passed on into bladder and tied in. Incisions rapidly healed. Discharged cured in 17 days. No fistula.

*Fatal cases.*

1. Male, æt. 49. Operated upon here for extravasation of urine 5 years ago. On examination scrotum partly bifid, scars on lower abdomen and in perinæum. One scrotal and several perineal fistulæ, through which urine is escaping; much brawny swelling, sloughs appearing at orifices of fistulæ. Day after admission perineal section, division of stricture, and catheter tied into bladder. Gradually sank from exhaustion. P.M.—Bladder thickened, dilated, and fasciculated. Recent cystitis. Chronic interstitial nephritis of both kidneys, with abscesses in the left. Recent hæmorrhage in base of right lung.

2. Male, æt. 62. Symptoms of stricture (gonorrhœal) for 32 years; perineal



abscess 30 years ago. Admitted with complete retention for 3 days, shivering fits the same time. On examination bladder distended nearly up to umbilicus, Perinæum brawny and scrotum sloughing. Cock's puncture and scrotal incisions. Never rallied, and died on 7th day. P.M.—Sloughing of membranous and posterior part of spongy urethra. Soft parts about neck of bladder infiltrated with offensive pus. Interior of bladder lined with a diphtheritic membrane, beneath which was intense congestion of bladder wall.

3. Male, æt. 48. Gonorrhœa 15 years ago. Never any symptoms of stricture. Scrotal swelling first noted 2 days before admission, while in bed suffering from "influenza." This burst, and urine escaped by the fistula thus formed. On examination perinæal swelling with sloughy-looking sinus, discharging foul pus and urine. Scrotum greatly enlarged and boggy, gangrenous in places. No. 5 silver catheter passed into bladder. Perinæal and scrotal incisions. Catheter tied in. Abscess formed, and was opened above pubes. Gradually sank, and died on 7th day. P.M.—Bladder hypertrophied and intensely congested in patches. Prostate enlarged. Tight stricture at bulb, behind which was a sloughy cavity communicating with the urethra. Scrotum sloughing. Extensive pleuritic adhesions. Lungs congested. Patch of pneumonia at left base. Atheroma of aorta.

4. Male, æt. 41. Symptoms of stricture (gonorrhœal) some years. Sudden pain in perinæum while straining during micturition 7 days ago, followed by swelling. On admission tense swelling in perinæum and redness and swelling of scrotum. No. 4 soft catheter passed into bladder. Perinæal incision; stricture dilated with Holt's instrument and No. 12 silver catheter tied into bladder. Scrotum incised 2 days later for increasing swelling. Much sloughing of scrotum and in perinæum, rigors, and temperature of 105°. Abdomen became distended and patient unconscious; died on 9th day. P.M.—Hypogastric region infiltrated with pus. Bladder hypertrophied; polypoid outgrowths of mucous membrane, covered with phosphates. Kidneys normal. Lungs: Area of grey consolidation in both upper lobes. Small cavity in right apex and small recent abscess (P pyæmic) in base of left, abutting on surface.

*Perinæal abscess.*—Males 7. C. 6, R. 1. Sequence of gonorrhœa in 2; of gleet in 1; of stricture in 2; probable connection with prostate in 2. All incised; 1 communicated with urethra, and catheter was tied in. Fistula remained on discharge in 1 case, probably connected with the prostate.

#### *Fistulæ.*

(a) *Urinary.*—Males 6. C. 2, R. 3, U. 1. Gonorrhœa, followed by stricture and abscess, in 5. Treatment: *Fistulæ* laid open and scraped in 2; external urethrotomy in 1; Syme's operation in 1; 2 refused operation. *Fistulæ* healed on discharge in 2; not quite healed 2.

(b) *Recto-vesico-vaginal.*—Female, æt. 24. Operation for vesical calculus 18 years ago, resulted in vesico-vaginal fistula; wore instrument for this, which caused ulceration into rectum. Left inguinal colotomy performed 1 year ago. Left hospital at own request.

(c) *Recto-vaginal.*—Female, æt. 11 months. Congenital. Too young for operation.

(d) *Vesico-vaginal.*—Female, æt. 18. Caused by ulceration of foreign body introduced into urethra (hair-pin) about 12 months ago. On examination small

fistula about  $\frac{1}{2}$  inch in diameter. Edges pared and united with silkworm gut. Healed by first intention.

(e) *Recto-urethral*.—Male, æt. 50. Perinæal abscess opened 10 years ago, probably communicated with prostate. Fistula remained. On admission fistula opening just inside anus, on anterior wall, communicating with membranous urethra. Supra-pubic cystotomy and drainage of bladder; 14 days later edges of fistula pared and united with silkworm-gut sutures, the rectum having been divided back to coccyx in order to give more room to expose fistula. Little or no union resulted. Second operation 28 days later and similar to the first, except that the edges of the fistula were brought together so as to form a horizontal line in the rectum, instead of a vertical one, as on the first occasion. On discharge fistula about half original size.

*Cystitis*.—Males 4, females 1. C. 4, R. 1. One readmission. One associated with gonorrhœal epididymitis; bladder washed out. One (? cause) in old man with enlarged prostate; catheter used. One probably due to tuberculous ulceration of bladder, which was washed out. Readmitted with cystitis worse. Supra-pubic cystotomy and drainage of bladder; rectal bag used and bladder injected with 6 to 8 oz. of fluid, but did not rise above pubes. On opening bladder a rent felt with finger on left side, low down, through which fluid had apparently passed into pelvic cellular tissue. Not a bad symptom, patient being kept on right side in bed. Erysipelas started from abdominal wound 33 days after operation; cystitis very much improved, apparently by erysipelas, urine being almost normal after the attack. Supra-pubic tube left out on 60th day; wound closed in 24 hours. Cystitis cured, and frequency of micturition diminished.

One case in female with frequent micturition and very offensive urine 12 months. Tumour also in region of right kidney. Refused treatment.

*Hydrocele*.—Males 13. C. 12, R. 1. Two encysted of cord; 11 of tunica vaginalis.

1. Male, æt. 18.—Three thick-walled cysts of cord and small hydrocele of tunica vaginalis. No communication between cysts and the latter or abdominal cavity. Cysts dissected out, except small portion adherent to cord. Healed by first intention.

2. Male, æt. 21. Single cyst size of egg; oblique inguinal hernia above; no communication between them. Cyst dissected out and radical cure of hernia performed. (See Special Table).

Of the 11 cases of tunica vaginalis 1 was double. Funicular process patent in 1, but no communication with abdominal cavity. Spontaneous hæmorrhage into sac in 1. Treatment: Incision and suture of edges of sac to skin in 3; in 2 of these a drainage-tube was used and wound closed. In one (double) wounds left open and sacs packed with cyanide gauze. Epididymitis followed in 2, and 1 suppurated. Small superficial wounds still to heal in all when discharged. Excision of greater part of sac in 5, in 4 of which wound was closed by continuous suture; slight suppuration in 3; sloughing of remaining portion of sac in 1. Injection of carbolic acid and glycerine in 3; 10, 15, and 30 minims respectively of pure acid being used. Some epididymitis and orchitis followed in each case. Inflammatory effusion removed by tapping several days after injections. On discharge slight effusion in 2; none in 1.

*Spermatocele*.—Males 2; both connected with globus major. Several previous tappings in each. Sac incised, greater portion removed, and edges of remainder sutured to skin in each case. Left hospital cured in 13 and 29 days respectively.

*Varicocele*.—Males 35. C. 32, U. 3. All on left side. Twenty-one had been rejected for one of the public services. Treatment: Excision between 2 ligatures in 31 cases (1 double); drainage-tube used in 3; suppuration followed in 5; epididymitis in 2; subcutaneous ligature in 1; cyst of epididymis also removed in 1. Two refused operation; 1 unsuitable for operation.

#### *Orethritis*.

(a) *Syphilitic*.—Males 4. C. 4. One double. Hydrocele in 3; testicular sensation absent in 2, much diminished in 2; breaking-down gumma in 2; oblique inguinal hernia same side in 1. Treatment: Potassium iodide, 3 testicles much diminished in size; hydrocele tapped in 3; castration and radical cure of hernia in 1.

(b) *Tuberculous*.—Males 7. C. 4, R. 2, D. 1. One readmission. Family history of "consumption" in 1; winter cough in 1; slight hydrocele in 3; vas deferens thickened in 6; sinus in 3; abscess in 1; hernia testis in 1, the result of incision for abscess on previous admission. Treatment: Castration in 5; no operation in 1, which improved under potassium iodide.

*Fatal case*.—Male, æt. 1. Abscess of epididymis opened 2 months ago. Readmitted with hernia testis, nodular epididymis, and thickened vas deferens. Castration. Wound healed, but scar broke down afterwards and wound suppurated. Child became very restless, gradually wasted. Vomiting, paralysis of left external rectus, and retraction of neck a few days before death. Many epileptiform convulsions day of death. No optic neuritis. P.M.—Tuberculous meningitis. Grey tubercle scattered in lungs. Yellow tubercle in spleen, and calyx of right kidney and mesenteric glands.

#### *Calculus*.

(a) *Impacted urethral*.—Males 3. C. 3 (ages 3, 9, and 11 years). All admitted with distended bladder. In 1 symptoms of vesical calculus for 6 months. In another a calculus had been previously passed. Treatment: One situated just behind fossa navicularis, removed with forceps under chloroform. One removed by perineal incision, wound left open, completely healed in 34 days. External urethrotomy in 1; no catheter could, however, be passed after removal of stone, so bladder was drained by a second incision in the perinæum, the anterior (urethral wound) being sutured, but had to be opened up later for swelling. Both wounds healed by granulation. Left hospital well in 33 days.

(b) *Vesical*.—Males 6. C. 3, D. 3. Nephrectomy in 2; nephro-lithotomy in 3 (1 fatal from shock).

1. Male, æt. 4. Symptoms 3 weeks. Stone about  $\frac{1}{2}$  inch in diameter. Circumcised, and meatus enlarged. Lithotripsy twice, bladder previously partly distended with fluid. Débris weighed about 8 grains, chiefly oxalate. Left hospital cured in 88 days.

2. Male, æt. 66. Symptoms of renal colic, with passage of calculi *per urethram* frequently for 15 years. Symptoms of vesical calculus 2 months. Stone  $\frac{3}{4}$  inch in diameter. Lithotripsy, débris 60 grains. Left hospital cured 7 days after operation.



3. Male, æt. 10. Symptoms for 18 months. Lateral lithotomy with straight staff. Oxalate stone. Wound healed in 20 days.

*Fatal cases.*

1. Male, æt. 29. Symptoms 9 years. Stone about  $\frac{1}{2}$  inch in diameter. Lithotripsy, no fluid previously injected into bladder. Small piece of bladder wall found in blades of lithotrite, with fragments of stone. Next day signs of peritonitis. Abdominal section; gas escaped from subperitoneal tissue, which was sodden with fluid. A little serous fluid in peritoneum. Thin, puckered, red patch size of shilling seen on posterior bladder wall. Peritoneum irrigated with boracic lotion and glass drainage-tube inserted. Condition improved slightly for next few days; bladder washed out frequently. Urine became offensive 6 days after operation. Died on 10th day. P.M.—No general peritonitis. Intestines adherent to bladder. Connective tissue round bladder sloughing and infiltrated with pus, extending beneath peritoneum on left side as high as kidney. Vertical hole, with sloughy edges, about middle of posterior wall of bladder, extending into the tissue of the viscus, but not reaching peritoneum. Patches of bronchopneumonia in lungs.

2. Male, æt. 48. Stricture at bulb, and enlarged prostate. Symptoms 6 months. Examined under anæsthetic 3 days after admission, and large stone discovered in bladder. Four days later patient died, in early stage of chloroform administration for operation. Ceased to breathe after a few respirations; artificial respiration for half an hour. P.M.—Extensive atheroma and dilatation of aorta. Lungs black from congestion and saturated with fluid. Nephritis. Bladder hypertrophied and dilated oval stone, weighing  $1\frac{1}{2}$  ounces.

3. Male, æt. 73. Enlarged prostate, for which he has used catheter regularly for years. Symptoms of stone 6 months. Some cystitis; a good deal of hæmaturia. Supra-pubic lithotomy. Rectal bag used, and 6 ounces of fluid injected into bladder. Stone smooth and oval,  $\frac{1}{2}$  by  $\frac{3}{4}$  inch. Edges of bladder sutured to skin on each side, and tube introduced into bladder. Considerable hæmorrhage from abdominal wound on 2nd day, which recurred several times before death on 6th day. Hiccough and vomiting last few days. P.M.—Subperitoneal hæmorrhage over lower part of abdominal wall. Bladder hypertrophied and dilated, showing signs of cystitis. Multiple adenomata of lateral lobes of prostate.

(c) *Renal*.—Males 1, females 4. C. 4, D. 1.

1. Male, æt. 34 (transferred from Medical Ward). Attacks of pain in left loin, accompanied by hæmaturia and sometimes vomiting, at intervals of about 3 months for last 5 years. On examination tenderness over left kidney, no tumour. Urine acid, trace of albumen, blood-cells, oxalate, and uric acid crystals. Incision in left semilunar line, and stone felt in pelvis of kidney by hand in abdominal cavity. Lumbar incision then made, kidney being fixed by hand in abdomen; pelvis of kidney opened with point of director, and cylindrical stone, about 1 inch long and  $\frac{1}{2}$  inch in diameter, removed with forceps. Kidney small. Abdominal wound sutured with silkworm gut. Drainage-tube put in lumbar incision, which was also sutured. First dressing soaked with clear fluid, after which there was no further discharge from the lumbar wound, which healed rapidly. Tube removed on 11th day. Blood in urine for 2 or 3 days after operation. Left hospital cured in 21 days; small sinus in left loin.

2. Female, æt. 40. Paroxysmal pains in right loin 20 years. Gravel and blood in urine 9 years ago, which disappeared 1 year later, when tumour first appeared in right loin. Frequency of micturition 18 months. On admission movable, lobulated, cystic tumour slightly bulging in right loin, and extending just to left of umbilicus. Upper limit 1 inch below ribs, lower limit at level of anterior superior spine. Nephrectomy 7 days after admission. Incision in right semilunar line, enlarged by another one through the right rectus muscle. Ureter and vessels tied separately, and the former brought out through an opening made in the loin, and fixed there. Glass drainage-tube for 24 hours; cyanide and mercurial dressings. Tumour composed of many cysts, each containing calculi (museum). Ureter sloughed, causing local suppuration and cellulitis, otherwise progress very satisfactory. Wound healed by first intention. Left hospital in 55 days after operation. Scar firm, and no tendency to hernia; passing from 30 to 40 ounces of urine in 24 hours.

3. Female, æt. 22 (transferred from Medical Ward). Pain in right loin and sediment in urine for 2 years. Tumour noted  $\frac{3}{4}$  months. On examination fluctuating swelling in right loin about twice size of normal kidney. Nephrectomy 3 days after transfer. Lumbar incision, enlarged at anterior extremity by vertical incision towards iliac crest. Vessels and ureter all ligatured together. Cystic kidney, filled with pus and calculi, one calculus completely blocking the ureter for  $\frac{3}{4}$  inch. Drainage-tube used, and an iodoform gauze plug to stop oozing; plug removed in 24 hours. Slight suppuration. Left hospital cured 77 days after operation. Small sinus in loin.

4. Female, æt. 41. Pain in right loin 18 months, accompanied by vomiting and increased frequency of micturition; attacks last several hours. "Blood" noted in urine on two occasions only. Nothing abnormal detected in loin. Nephro-lithotomy 10 days after admission. Lumbar incision, calculus felt in pelvis of kidney; incision about  $\frac{3}{4}$  inch made in pelvis, and uric acid stone size of an almond removed with forceps. Drainage-tube used; wound sutured, and dressed with iodoform. Urine blood stained for a few days; little, if any, escaped by lumbar incision, which had completely healed in 29 days. Left hospital cured 32 days after the operation.

*Fatal case.*—Female, æt. 66 (transferred from Medical Ward). Attacks of pain in right loin, followed by hæmaturia, off and on for 3 years. On admission hard irregular mass in region of right kidney. Urine offensive, and contained pus and blood-clots. General condition feeble, but improved slightly. Nephro-lithotomy 32 days after transfer. Lumbar incision; kidney substance incised, and two large calculi removed, one in two portions. Drainage-tube inserted into kidney and wound sutured; cyanide dressings. Patient did not recover from shock of operation, and died in 3 hours. P.M.—Right kidney represented by an elongated sac, with very little kidney substance left. Left kidney in an advanced stage of interstitial nephritis, and contained a large calculus in its upper part. Liver contained a cyst, probably hydatid.

*Hydronephrosis.*—Female, æt. 32. Pain in right loin 9 months. Gravel 4 months. On examination ill-defined tumour in region of right kidney, which altered considerably in size during stay in hospital. Refused exploration.

*Pyonephrosis.*—Female, æt. 40. Three attacks of pain shooting down right thigh, and accompanied by shivering and vomiting, during last 9 months. In-



creased frequency of micturition, with yellow matter in urine, followed the attacks. On admission, tumour size of cocoanut in region of right kidney. Nephrotomy. Lumbar incision. Kidney enlarged and tense, incised, and about 10 ounces of healthy pus evacuated. Calyces dilated, but no calculi felt, nor cheesy matter. Kidney drained. Discharged 90 days after operation. Sinus in right loin, through which several ounces of urine escape during 24 hours. Patient had gained flesh very considerably since the operation.

*Tuberculous kidney.*—Males 3, females 5. C. 3, R. 1, U. 2, D. 2. Nephrectomy in 2. Nephrotomy 1. Exploration 1. Refused treatment 2. Fatal 1. No operation.

1. Female, æt. 21. Nephrotomy for tuberculous pyo-nephrosis, left kidney, 5 years ago, and again 1 year ago, the kidney being excised 8 months ago. Re-admitted with pain in right loin, tenderness, and vomiting. No tumour detected, but right side of abdomen rigid, and great tenderness over kidney behind. Hypogastric pain on micturition. Small amount of albumen in urine, which is acid; quantity variable, 20 to 30 ounces in 24 hours. Nephrotomy. Kidney appeared to be almost entirely composed of caseating material. Wound healed with some suppuration. Discharged 108 days after operation, with small sinus in right loin. Passing 30 to 40 ounces of urine in 24 hours, none by sinus.

2. Female, æt. 52. Frequency of micturition 6 or 7 months, with yellow sediment in urine. Examined under anæsthetic, and some enlargement of left kidney made out. Urine acid, and contained pus. Nephrotomy. Lumbar incision. Kidney contained a small amount of pus and caseous material. Tube introduced into kidney. Urine drained away by wound. Left hospital 21 days after operation, with sinus in left loin, discharging small quantity of urine. Frequency of micturition much diminished.

3. Female, æt. 46. Dark sediment in urine 1 year and shooting pains in left loin. Tumour noted 3 months. On admission movable tumour in left side of abdomen, which it about half fills. Nephrectomy. Incision in semilunar line enlarged by another carried backwards through muscles of left loin. Ureter and renal vessels ligatured separately. Kidney composed of dilated calyces filled with cheesy tuberculous material. Glass drainage-tube used for 48 hours. Wound healed by first intention. Left hospital cured 30 days after operation.

4. Male, æt. 26. Pain in right loin 5 years. Attacks of hæmaturia followed in half an hour by pain, for last year. No tumour detected. Kidney exposed by lumbar incision, and explored with needle. No calculus detected. On surface of kidney were several small caseating nodules, size of a pin's head. Symptoms slightly relieved by operation.

#### *Fatal cases.*

1. Male, æt. 22. Symptoms 3½ years. Supra-pubic cystotomy to explore bladder in Winchester Hospital, which patient left 5 months ago. On admission much emaciation, tumour in region of right kidney. Gradually sank and died in 24 days. P.M.—Right perinephritic abscess and advanced tuberculous kidney. Lardaceous disease of left kidney, liver, and spleen. Bladder atrophied and contracted, showed signs of cystitis.

2. Male, æt. 43. Symptoms 10 years, worse of late. Pain in right loin, increased frequency of micturition, hæmaturia, and offensive urine. On admission

very anæmic and short of breath. Blood in urine and per rectum. Suppression of urine for 36 hours before death. P.M.—Lungs tuberculous. Endocarditis, aortic and mitral. Left kidney small, and composed of separate cysts filled with cheesy material; pelvis obliterated; no kidney substance left. Right kidney larger, and in less advanced stage of disease than left. Some renal tissue remaining.

*Perinephritic abscess.*—Males 1, females 1. R. 1, D. 1.

Female, æt, 49. Increased frequency of micturition 3 years. Swelling in right loin noted 1 month. On examination fluctuating tumour in right lumbar region. Aspirated, and about 40 ounces of thin dark fluid removed. Re-accumulated, and was incised and drained. Left hospital with sinus discharging a small quantity of pus.

*Fatal case.*—Male, æt, 34. Urine thick and offensive for two months. Little or no pain. On admission left loin slightly bulged by fluctuating swelling. Incision setting free a large quantity of fætid pus. Became very restless, and died suddenly 11 days after operation. P.M.—Left kidney much enlarged and dilated, containing about half a pint of pus and a large branched calculus in its upper part. Lower end of left ureter blocked for  $1\frac{1}{2}$  inches with clay-like material. Right kidney enlarged and pelvis filled with pus. Pneumonia of base of right lung, probably due to embolism, clot being carried by left renal vein, which was inflamed, and only separated from pus by the thickness of its wall. No clot *in situ*.

## LOCOMOTOR SYSTEM.

### *Hip-joint—*

*Arthritis.*—Males 40, females 19. C. 24, R. 31, U. 2, D. 2. (Eight readmissions.) Family history of “consumption” in 8. History of trauma in 21. One followed an attack of rheumatism and one measles. One suffered from hæmaturia and ? tuberculous kidney. Sinuses existed in 11, abscesses in 14, ankylosis in 1 (flexed position), dislocation in 1. One developed meningitis a few days after admission, and was transferred to Medical Ward, where she died (P.M.—tuberculous meningitis). Diphtheria 1, transferred to Medical Ward, where she died.

*Duration.*—Under 2 months 12; under 6 months 8; under 12 months 13; over 12 months 25.

*Treatment.*—Thomas’s splint in 26; extension without splint in 2; long outside and extension in 1; crutches and patten in 1.

Excision in 7. C. 3, R. 2, D. 2. Preliminary opening of abscesses in 2; previous removal of sequestrum from head of bone in 1; acetabulum extensively diseased and perforated in 2; head of femur dislocated in 1; sequestrum in neck of femur with early synovial disease in 1. Of the 7 excisions 2 were performed by the anterior incision.

### *Fatal cases.*

1. Male, æt, 14. No tuberculous history. No injury. Symptoms 4 months. Has been wearing Thomas’s splint for 3 months. Excision of left hip 4 days after admission. Head and neck of femur extensively carious. Large quantity

of curdy pus in joint. Acetabulum carious, and on scraping it the spoon slipped through into pelvis, opening a large abscess cavity, which was then drained through the acetabulum. Discharge very copious, and patient gradually lost strength. Amputation at hip-joint 111 days after the excision. External and internal skin flaps made, to avoid sinuses. Acetabulum and upper end of femur still very extensively diseased. Rallied after operation, but sank again and died in 28 days. P.M.—Extensive caries of ilium. Mesenteric and mediastinal glands caseous. A little yellow tubercle in lungs. Liver, spleen, and kidneys pale.

2. Male, æt. 3 $\frac{3}{4}$ . No history of tubercle or injury. Pain in right hip 14 weeks, starting pains 12 weeks. Fluctuation over front of joint. Three days after admission joint opened by anterior incision; pus evacuated and head of femur and acetabulum scraped. Thirty-three days later a large sequestrum was removed from head of femur, and 4 days afterwards this was excised, together with 2 inches of the shaft, by a posterior incision. Acetabulum extensively diseased, and was scraped. Large abscess formed subsequently to the excision, and was opened. Child gradually sank, and died from exhaustion 56 days after excision. No P.M.

*Old excision of hip.*—Males 3, females 2. R. 5. Abscess in 1. Sinuses in 3.

In one case (female), excision of right hip 3 years ago. Discharging sinuses have remained since. Scraped 7 days after admission, and 33 days later upper end of femur was found to be extensively carious, and 3 inches excised. Acetabulum completely obliterated. Large carious patch on venter of ilium scraped. Erysipelas started from the wound 4 days after operation. Transferred to Anne Ward, 10 days after which she developed diphtheria, from which she died in 8 days. No. P.M.

*Osteo-arthritis.*—Males 5, females 1 (both hips in 3). Ankylosis in flexed position in 1, treated with high boot. Partial dislocation of both hips in male of 17, probably caused by bony out-growths in acetabula.

*Ankylosis.*—Males 3, females 1. All probably due to old tuberculous disease. One double treated by removal of wedge from neck of right femur and osteotomy below the trochanters of left femur. Two treated by subtrochanteric osteotomy. One refused treatment.

*Knee-joint.*—

*Arthritis.*—Males 23, females 11. C. 20, R. 9, U. 4, D. 1. Right 18, left 16. Family history of consumption in 9, and of joint disease in 2. One suffering from phthisis on admission. History of trauma in 10. All probably tuberculous in nature, 1 senile. Sinuses existed in 5. Abscesses in 2. Tuberculous disease of opposite ankle in 1, and of opposite tibia in 1. Infantile paralysis of limb in 1.

*Treatment.*—Excision in 10. C. 8, R. 1, D. 1. Secondary hæmorrhage on 84th day after excision in one; amputation of thigh in lower third. Popliteal artery ulcerated at its bifurcation, and lying in an abscess cavity; no sharp bone in vicinity of vessel. Primary disease situated in femur in 2, tibia in 3, and synovial membrane in 5. Arthrectomy in 6 cases, 3 partial only; preliminary incision of abscess in 1. Trephining of tibia in 1; readmitted for excision, and primary disease found in femur. Joint incised and drained in 1; simple incision of abscesses in 2; scraping of sinuses in 1; amputation of thigh in 7 (1 following excision for secondary hæmorrhage). Previous drainage of joint in 1. Reampu-

tation in 1, for retraction of flaps. Koch's treatment tried in 4, with no good result. Two cases refused treatment.

*Fatal case.*—Male, æt. 48. Family history of consumption. Swelling of right knee noted 10 months. Typical case of synovial disease. Trace of albumen in urine. Excision. Patella sawn across, disease almost entirely limited to synovial membrane. Bones pegged and patella wired. Drainage-tube on outer side. Cyanide dressings and plaster-of-Paris splint. Wound suppurated freely. Hæmaturia commenced 3 days after operation, and albumen increased. Patient became dull and apathetic. Temperature subnormal. Died 15 days after operation. P.M.—Pneumonic consolidation of lower lobe of left lung. Congestion and œdema of right lower lobe. Abdominal viscera decomposed, apparently healthy. No tubercle found anywhere. Site of operation healthy.

*Old excision of knee.*—Females 2. Sinuses in both. One scraped. One caused by wire sutures which were used at the excision. Sutures removed and sinuses excised.

*Old arthrectomy of knee.*—Males 4. C. 3, R. 1. One admitted for pain, but nothing wrong detected. One for sinuses, which were scraped. One excised; previous arthrectomy 4 months ago, now sinuses and pulpy swelling of joint. Disease found to be chiefly synovial. Discharged cured. One (male, æt. 10) admitted with sinuses after arthrectomy 4 months ago, and caries of spine. Koch's treatment caused no alteration in knee, but a psoas abscess appeared 12 days after first injection, and gradually became more and more tense. It was opened in the loin, scraped out, irrigated, and closed, without drainage. Scar broke down, after healing by first intention.

*Acute suppurative arthritis.*—Female, æt. 1. Pain and swelling noted 8 days. Incision and drainage. Left hospital with wounds healed, and no sign of disease in joint. Tibia slightly displaced backwards, and a little lateral movement at knee.

*Hæmarthrosis.*—Males 2. C. 1, R. 1. No family history in either.

1. Male, æt. 10. Frequent epistaxis. Sudden swelling of ankle on one occasion. Swelling of right knee off and on for 3 years, suddenly increased last few days. Treated with splint and lead lotion. Effusion absorbed in 25 days.

2. Male, æt. 20. Previous prolonged hæmorrhages from slight injuries. Swelling of right knee for 2 years, much increased last 3 days. Sudden hæmorrhage into left elbow after admission. Splint and ice-bag. Discharged at own request.

*Subluxation of int. semilunar cartilage.*—Male, æt. 34. History of sprain. Slight synovitis. Spring clip.

*Osteo-arthritis.*—Males 2. R. 2. Both treated with Scott's dressing and strapping.

*Synovitis.*—Males 1, females 3. C. 3, R. 1. Double in 1, syphilitic. Rheumatic 1. Gonorrhœal 1. Doubtful cause 1.

*Ankylosis.*—Males 6, females 2. C. 8 (1 readmission). Five following tuberculous disease (two old excisions), and 1 following wound of joint. Excision of wedge in 3. Supra-condyloid osteotomy in 2 (followed in 4 months, in 1 case, by amputation of thigh for suppurating in and around knee-joint). One



case, fibrous, straightened under anæsthetic and put up in plaster of Paris. In one case, female, æt. 24, hips, knees, ankles, and left shoulder ankylosed since an attack of scarlet fever 2 years ago. Both knees excised, with an interval of 4 months. Passive movements to other joints. Firm bony union obtained in knees, and fair movements in other joints.

#### *Ankle—*

*Arthritis.*—Males 7, females 4. C. 7, R. 4. Right 3; left 8. All apparently tuberculous. History of trauma in 4. In 1 amputation of opposite leg for disease of ankle 28 years ago.

*Treatment.*—Plaster-of-Paris splints in 3; Koch's treatment in 1 with tuberculous disease also of opposite wrist; no result. Arthrectomy in 1, and subsequent scraping of sinuses. Amputations in 6; leg 3. Syme 4 (1 being followed by amputation of leg); incision and drainage of joint in one case previous to Syme.

*Old arthrectomy of ankle.*—Admitted with sinuses, which were scraped. Arthrectomy 12 months previously.

*Acute arthritis.*—Male, æt. 9. Injury 4 weeks ago. Ankle incised in an infirmary. On admission: Sloughy wound on outer side, communicating with joint; offensive discharge. Amputation of leg. Joint full of pus. Cartilage eroded. Sequestrum in head of astragalus, calcis bare in whole extent. Epiphysis separated.

*Shoulder.*—Males 2. C. 1, R. 1. Both apparently tuberculous. Early hip disease in 1. Both excised. One readmitted 3 months later with extensive caries of upper end of humerus and glenoid cavity. Two inches of humerus excised and glenoid cavity scraped. Readmitted a second time, and a large portion of scapula excised for necrosis.

*Elbow.*—Males 2, females 2. C. 5, R. 2. Right 2; left 5. Family history of "Consumption" in 2. History of trauma in 4. Amputation of 4th toe with metatarsal bone in one, for caries.

*Treatment.*—Plaster-of-Paris splint 1, readmitted for abscess later; incision of joint, followed later by sequestrotomy in 1; excision of elbow in 4, resulting sinuses scraped twice in 1. Koch's treatment in 2, 1 previously so treated at King's College Hospital.

*Ankylosis of elbow.*—Two cases, 1 after fracture of olecranon, 1 fracture of internal condyle of humerus. Passive movement in both.

*Wrist.*—Males 5, females 2. C. 5, R. 1, U. 1. Right 4; left 3 (all apparently tuberculous). Family history of "Consumption" in 1. History of trauma in 2. Phthisis of both apices in 1. Spinal caries 1. One following compound ganglion of wrist.

*Treatment.*—Excision of wrist, followed by amputation of forearm in 2 cases. amputation of forearm in 2; scraping of sinuses in 2. Refused operation 1.

*Gonorrhæal synovitis of wrist.*—Discharge ceased 14 days, since which swelling of wrist. Admitted for extensive swelling of hand and forearm, with fluid in wrist joint; joint aspirated and clear fluid removed. All effusion subsided before discharge.



## SUMMARY OF INJURIES.

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### GENERAL INJURIES.

*Burns.*—Males 22, females 19. C. 22, R. 1, D. 18.

*Situation.*—Face 2; neck 1; scalp 1; pharynx 1; face and neck 1; face and hands 4; face and upper extremities 4; face, neck, scalp, and hands 1; face, neck, chest, and arms 2; face, neck, hands, and thighs 1; hands 1; upper extremities 4; chest and arm 1; chest, abdomen, and hands 1; chest, abdomen, thigh, and arm 1; trunk 1; trunk and arms 3; trunk and legs 1; upper and lower limbs 1; lower limbs 1; general 8.

*Causes.*—Ignited clothing 20; falls into fire 7; explosions of paraffin lamp 4; gas explosions 2; gunpowder 2; chemicals 3; hot pipes 1; flame of furnace 1; swallowing hot potato 1.

*Treatment.*—Primary, carron oil 3; boracic bath 7; boracic ointment 14; lotions of lead or borax 8; vaseline and iodoform 2.

*Fatal.*—From collapse: males *æt.* 7 weeks, 2, 3, 4, and 4 years. Females  $1\frac{1}{2}$ , 4, 5, 5, 10, 11, 12, and 15 years. Exhaustion: females 10 months, and  $1\frac{3}{4}$  years. Suppression of urine: female 34. ? Meningitis: male 40 (no P.M.). Cerebral abscess: male 23, subject to epileptic fits. Admitted with burn of neck, incoherent and noisy, became comatose, and died on 3rd day. P.M.—Basal meningitis. Caries of left mastoid and tympanum. Dura mater separated by pus from petrous bone. Large abscess in left temporo-sphenoidal lobe.

*Scalds.*—Males 24, females 10. C. 25, D. 9.

*Situation.*—Face 2; neck 3; pharynx 2; larynx 2; face, neck, and arms 3; face, chest, and abdomen 1; trunk and head 1; abdomen and thighs 1; chest 2; chest and neck 2; chest and arms 2; neck and arm 2; trunk and thighs 1; chest and abdomen 1; chest, abdomen, arm, and thighs 1; four extremities 1; lower extremity 1; leg 2; foot 1; general 2; buttocks 1.

*Causes.*—Boiling water 22; steam 3; scalding tea 8; scalding milk 1.

*Complications.*—(Edema of glottis in 2, of fauces in 2; two transferred for scarlet fever on 2nd and 4th days respectively; bronchitis 1.

*Treatment.*—Primary boracic bath 5; Ung. Boracis 9; Lot. Boracis 3; Lot. Plumbi 2; Lot. Sodæ Chlor. 3; Lotio Rubra 1; vaseline 2; vaseline and iodoform 1; tent and steam kettle 2; tracheotomy 2.

*Fatal.*—Collapse: males *æt.*  $1\frac{1}{4}$ ,  $1\frac{3}{4}$ ,  $1\frac{1}{2}$ , and 2. Females  $1\frac{1}{4}$  and 9. Exhaustion: males 2 and 32. Female  $2\frac{1}{2}$ .

No post-mortem examination on burns or scalds, with exception of one case noted above.

## LOCAL INJURIES.

*Scalp wounds.*—Males 13, females 7. C. 18, D. 2.

*Complications.*—Bare bone 9; fracture of inferior maxilla 1; pneumonia 1 hæmophilia 1 (readmitted in 5 days for recurrence of hæmorrhage); tetanus 1; ruptured globe and fracture of malar and nasal bones 1.

*Fatal cases.*

1. Male, æt. 5. Scalp wound exposing bone in right temporo-frontal region. Dirt ground into flap and bone grazed. Antiseptics, counter opening, and drainage-tube. Some purulent discharge from tube, but sutured wound healed. Stiffness of neck noted on 6th day with retraction of head; face livid; unable to lie on his back; difficulty in swallowing shortly after, and frequent spasms, during which respiration ceased and artificial respiration had to be done. Treated with chloral *per rectum*, and chloroform watch instituted. Died during a spasm 27 hours after first symptom, during which time there had been 46 spasms in all. P.M.—Bare bone over 2 inch circle; no other injury; collapse of bases of lungs, otherwise organs healthy; no change in nervous system.

2. Female, æt. 79. Clean scalp wound in frontal region, large surface of bare bone. Fracture of nasal and left malar bones; extensive contusion of face; hæmorrhage from nose and vomiting of large amount of dark blood. Rupture of left eyeball, refused to have eye removed. Scalp wound healed by first intention, and general condition improved till 22 days after admission, when patient suddenly died during an attack of stertorous breathing. P.M.—Thrombosis of pulmonary artery, clot extending as dark, soft, loose threads into small branches of the artery; no fracture of skull; brain atrophied; excess of fluid on its surface and in ventricles.

*Concussion.*—Males 61, females 11. C. 71, D. 1 (slight in 26). Nine under influence of alcohol on admission.

*Complications.*—Hæmorrhage from ear 5 (in two of these tympanic membrane seen to be ruptured. Hæmorrhage from nose 6. Scalp wounds 21 (bare bone in 6 of these). Hæmatoma of scalp 16. Contusions of face 7. Subconjunctival ecchymosis 8. Wound of face 5. Contusion of shoulder 1. Wound of leg 1. Compound fracture iliac crest and dislocation of outer end of clavicle 1. Facial paralysis 1. Epilepsy 1. Pneumonia 1 (admitted with the disease). Measles 1, rash appeared day after admission. Injury to abdomen 2 (1 fatal). Perimetritis and cirrhosis of liver 1. Insomnia 1. Fits 1 (male, æt. 8, two fits, conjugate deviation of eyes to left, rigidity of left arm, teeth clenched). Hallucinations 1. One case said to have been delirious for seven days before admission.

*Fatal case.*—Male, æt. 30, coal porter. Fell off back of carriage in motion. Severe shock, pulseless. Small superficial scalp wound in occipital region. Consciousness gradually returned, became very restless. Abdominal pain. Abdomen rigid and slightly prominent. Died in 14 hours, never recovering from shock. P.M.—Abdominal cavity contained over 4 pints of fluid and clotted blood. Several large ruptures in each lobe of liver. 7th to 10th ribs fractured on right side. All organs pale.

*Fractures of vault of skull—*

*a. Simple depressed.*—Female, æt. 2. Wheel of coal cart said to have passed over head. Semi-conscious. Hæmorrhage from nose and ears. Fracture of left superior maxilla. Pupils dilated and inactive. Pulse imperceptible. Respiration shallow, temperature 96°. Longitudinal depression right side of skull extending horizontally on level of top of pinna. Died in 5 hours. Convulsions of right side previously. P.M.—Fracture on right side extending from just in front of posterior inferior angle parietal, forwards across squamous bone to middle fossa. Similar, but less extensive fracture on opposite side. Transverse fracture of base separating lesser wings of sphenoid from frontal. Some bruising of præfrontal lobes of brain.

*b. Compound.*—Males 3. C. 2, D. 1.

1. Male, æt. 11. Fell on stone steps, striking forehead. Scalp wound over left eye exposing horizontal fissure of frontal bone. No symptoms. Discharged cured in 3 days.

2. Male, æt. 14. Struck by stone. Scalp wound in left parietal region exposing fissure of bone extending up and back. No symptoms. Discharged cured on 6th day.

*Fatal case.*—Male, æt. 34. Fell 18 feet from scaffold, unconscious, one inch scalp wound behind external angular process left frontal, bare bone. No signs of fracture of base. Became restless and noisy for 6 days, then remained quiet up to death on 15th day. Retention of urine. Extravasation beneath left conjunctiva a few hours after admission. No optic neuritis. Temperature rose to 103·6° on one occasion two days before death. Scalp wound healed. P.M.—Fracture running horizontally across left parietal bone, and one inch in same direction on to frontal, then bending back and inwards across left orbital plate, ending at mid-line in sphenoid; behind it extended inwards, ending at the margin of the foramen magnum. Some splintering and depression of inner table of parietal. Blood-clot between dura mater and bone. Laceration of tip of each frontal lobe and right temporo-sphenoidal; around the latter a little subacute meningitis.

*c. Compound depressed.*—Males 4, females 2. C. 2, D. 4 (trephined 5).

1. Male, æt. 23. Struck by falling brick (? 60 feet). Unconscious and restless. Pulse full, bounding, and slow. Respiration shallow. Pupils equal and active. Irregular scalp wound over anterior superior angle left parietal, exposing depressed bone. Three hours after admission chloroform, wound enlarged, exposing triradiate fracture, each limb about 1½ inches, with slight depression at junction of limbs, ½ inch trephine applied here, and depressed portion removed. Large vein entering longitudinal sinus opened, causing considerable hæmorrhage, plugged with catgut, as was also the trephine hole. Antiseptic dressing. No drainage-tube. Very restless after operation. Retention of urine 1 week. Catgut plug came away on 19th day. No suppuration. Optic discs normal. Temperature throughout normal or subnormal. Discharged cured in 49 days.

2. Female, æt. 6. Struck on forehead by stone. Irregular wound above right eye exposing depressed bone. Slight shock. Wound enlarged under chloroform, trephining and elevation, several small fragments removed, one penetrating dura mater. Wound closed, no drainage-tube. Progress good. Discharged cured in 16 days.

*Fatal cases.*

1. Male, æt. 37. Knocked down by engine, and thrown against girders of bridge. Conscious on admission but gradually became collapsed. Irregular wound just above and in front of left parietal eminence, exposing circular depressed fracture  $1\frac{1}{4}$  inches in diameter. Several other scalp wounds. Fracture of left femur in upper third. Extensive crush of left foot, with separation of skin over dorsum, and fracture of metatarsals. Chloroform. Two part circles of bone removed with trephine, and depressed bone elevated and removed. Dura mater intact. Drainage-tube used. Lisfranc's amputation of foot. Rallied from operation. Wandering next day. Temperature just above normal. Noisy delirium day before death. Temp.  $102^{\circ}$ . Died on 7th day. P.M.—Slight bruising tip of left occipital lobe. No other injury to brain. Dura mater intact. Amputation wound of foot sloughy. Single horseshoe kidney.

2. Male, æt. 52. Found unconscious on railway line. Stertorous breathing, 36 per minute. Pulse weak, 86. Temp.  $95^{\circ}$ . Right pupil widely dilated, left contracted. Paralysis of left side of face and hæmorrhage from nose. Two scalp wounds, each exposing depressed bone, one extending up from left eyebrow for 4 inches, exposing extensive depressed fracture of frontal, just to right of mid-line; brain matter exuding between fragments. The other wound at back of head exposing depressed fracture running down across posterior superior angle right parietal, and  $1\frac{1}{2}$  inches of occipital bone, branching below into two. Skull trephined, without anæsthetic, on each side of posterior fracture, and depressed bone removed. Dura mater intact. Superior longitudinal sinus exposed uninjured. Anterior wound enlarged, and depressed bone elevated and removed. Depression and comminution extensive. Dura mater much lacerated, and brain-substance escaping. One fragment deeply embedded in brain. Drainage-tubes used, and each wound sutured. Remained in same condition, and died 8 hours after operation. No P.M. notes.

3. Male, æt. ? 65. Picked up in street, supposed to have been run over. Semi-conscious. Large longitudinal scalp wound in left parietal region. Fissure of frontal and parietal bones, running back and slightly upwards, exposing extensive extravasation into orbits, protruding eyes. Pupils dilated and unequal. Right facial paralysis. Respiration stertorous. Coma became absolute in two hours, and death took place 20 hours after admission. Temperature subnormal throughout. P.M.—Compound comminuted depressed fracture of left parietal bone, from which a fissure extended downwards and forwards across frontal, and then transversely across anterior fossa, fracturing both orbital and cribriform plates. Complete disorganisation of left frontal lobe. Laceration of right frontal and tips of temporo-sphenoidal lobes. Extensive hæmorrhage into left internal capsule. Fracture of 2nd and 3rd left ribs.

4. Female, æt. ? 40. Picked up on railway line. Semi-comatose. Surface cold. Pulse scarcely perceptible. Temp.  $97^{\circ}$ . Pupils equal and inactive. Hæmorrhage from left ear. Scalp wound extending upwards and backwards from outer angle left frontal bone, over anterior part of parietal, exposing depressed fracture of these bones. Fracture of left humerus in upper third. Trephining, and removal of a large amount of depressed bone. Blood-clot between dura mater and bone. Dura mater opened, and fluid gently syringed beneath it, escaped at nose and down pharynx. Patient became worse, and ceased to breathe.



for some seconds, did not rally, and died very shortly after operation. P.M.—About 2 square inches removed from frontal and parietal bones. Left wing of sphenoid comminuted, and a fissure extended across left orbital plate, joining behind several fractures of body of sphenoid, through which probe passed into mouth. Anterior clinoid process broken off. Slight bruising of brain at seat of fracture. Phthisis.

*Punctured fracture of skull.*—Female, æt. 1½. Fell on peg-top, point of which penetrated left temple. Mother had to pull top out. No symptoms. Puncture in skin 1¾ inches above and behind outer angle of left orbit. Probe enters skull cavity. Trephined, some splintering of inner table. No depression. Puncture in dura mater. No prolapse of brain. Wound healed by first intention, without a bad symptom. Left cured in 29 days.

*Bullet-wound of skull.*—Males 2. C. 1, D. 1.

Male, æt. 24. Shot himself with revolver in right temple. No symptoms. Point of entry ½ inch horizontally behind external angular process of frontal. Hæmorrhage from nose. Probe passes 2 inches, and through an opening with hard edges, ? skull. Next day had a “fit.” Noticed to be incoherent, then threw himself back in bed. Head retracted. Convulsive movements of limbs. Evacuations passed into bed. Paresis of right external rectus. Other muscles normal. Optic discs normal. Discharged cured in 23 days.

*Fatal case.*—Male, æt. 58. Shot himself with revolver just in front of the tragus of right ear two hours before admission. Said to have been considerable hæmorrhage from the wound. None on admission, when patient was moribund, and died in 1½ hours. P.M.—A little effused blood at base of brain. No contusion of cortex. Dura mater over anterior surface of petrous bone intact, but bone beneath splintered. Internal carotid artery torn across in its canal at the apex of petrous bone. Flattened bullet covering the orifice of the artery.

*Fractures of the base.*—Males 14, females 2. C. 5, U. 1, D. 10 (trephining 1). Crossing anterior fossa 4 (3 proved by P.M.), middle fossa 6 (1 proved by P.M.), posterior fossa 3, posterior and middle 1, middle and anterior 1 (all proved by P.M.). Hæmorrhage from one ear 7, both ears 1. Hæmorrhage from nose 7, from pharynx 2. Serous discharge from ear 1. Subconjunctival ecchymosis 5. Ecchymosis over mastoid 2. One transferred to Medical Ward on 26th day for ? meningitis, never completely recovered, and lay in listless condition, passing evacuations into bed. Slight retraction of head. Eyes normal.

*Complications.*—Scalp wound 9 (with bare bone 2). Wound of face 3. Facial paralysis 2. Internal strabismus 1. Clonic spasms 1. Fractured radius 1, femur 1, humerus 1. Slight deafness 1. 6 cases alcoholic on admission.

*Fatal cases.*

1. Male, æt. 73. Treated in Casualty 3 days before admission for scalp wound and slight concussion, alcoholic. Went home and gradually became unconscious Comatose on admission. Pulse 120, resp. 32, temp. 100.° Conjugate deviation of eyes to right. Pupils dilated and inactive. Optic discs normal. Died 6 hours after admission. Temperature rose to 105° just before death. P.M.—Linear fracture of right orbital plate and wing of sphenoid. No communication with nose. Dura mater intact. Basal meningitis with much lymph. Ventricles contained dull red pus.

2. Male, æt. 50. Supposed to have fallen down some stone steps. Comatose on



admission. Pupils dilated and inactive. Large scalp wound in occipital region. Died in 9 hours. Temperature subnormal. P.M.—Linear fracture of 5 inches on left side, extending from level of posterior margin of foramen magnum upwards and backwards. Dura mater intact. Large hæmorrhage between it and the bone. Laceration of under-surface of left frontal lobe. Vessels at base atheromatous. Small recent hæmorrhage involving left lenticular nucleus.

3. Male, æt. 50. Suffers from "fits." Fell 3 feet on head. Comatose. Hæmorrhage from mouth and nose. Ecchymosis of left eyelids. Evacuations passed involuntarily. Pulse slow. Died in 2 hours. P.M.—Both orbital and cribriform plates extensively fractured. Small subdural hæmorrhage over right occipital lobe.

4. Male, æt. 32. Knocked down by runaway horses. Suffering from shock. Several wounds of face. Hæmorrhage from right ear, nose, and mouth. Ecchymosis of lids. Pupils dilated and act to light. Temperature subnormal throughout. Died 30 hours after admission. P.M.—Depressed piece of bone size of threepenny piece in centre of right posterior fossa. From here one fracture passed forwards across petrous bone and middle fossa. A second starting from same spot passed transversely across occipital bone, midway between torcular and foramen magnum, and nearly across left posterior fossa. Lesser wings of sphenoid separated from orbital plates.

5. Male, æt. ? 45. Picked up in street unconscious. Comatose on admission. Scalp wound in occipital region. Pulse feeble and irregular, 50. Cheyne Stokes' respiration. Breath smelt of alcohol. Pupils equal and dilated, act sluggishly. Respiration became stertorous, and patient died in  $1\frac{1}{2}$  hours. P.M.—Layer of blood-clot over posterior half of brain. Fracture on right side, extending from jugular foramen up and out, across root of mastoid, parallel with and just above lambdoid suture to end in mid-line. Lateral sinus uninjured. Bruising of surface of left frontal lobe. Mitral disease.

6. Male, æt. 70. Fell from second-floor window. Comatose on admission. Wound on outer side of left orbit. Subconjunctival ecchymosis. Left pupil dilated, right contracted. Hæmorrhage from nose. Pulse full, 120. Temp.  $100^{\circ}8'$ . Respiration stertorous. Fracture left femur and lower end left humerus into elbow-joint. Condition unchanged up to death in 22 hours. P.M.—Fracture of left orbital plate, extending into frontal sinus at outer end, and cribriform plate at inner. Hæmorrhage into left optic thalamus. Blood in ventricles.

7. Male, æt. 9. Fell 12 feet on head. Conscious on admission. Contusion above right ear. Clear yellow fluid escaping from right meatus, spurting out in a jet when patient coughs; very irritable. Conjugate deviation of eyes to right. Temperature subnormal. Died 42 hours after admission, fluid continuing to escape up to death, when temperature rose to  $104^{\circ}$ . P.M.—Fracture extending from right foramen ovale, backwards across petrous bone, opening into the middle ear and superior semicircular canal, then on to parietal bone for  $1\frac{1}{2}$  inches. No injury to brain.

8. Male, æt. 38. Died in Casualty room. Supposed to have fallen off top of a train. P.M.—Fracture extending from right side of torcular to right jugular foramen, and from there a fracture extended into foramen magnum, and a second short one forwards and outwards for  $\frac{1}{2}$  inch. Laceration of tip of left frontal lobe. Hæmorrhage into centre of right cerebellar hemisphere.

9. Female, æt. 50. Wheel of cab said to have passed over her head. Comatose on admission. Scalp wound in right temporal region, exposing bare bone. Pulse full, 72. Respiration stertorous. Right pupil contracted, left dilated. Subconjunctival ecchymosis right eye. Coma increased, and right temporal region was trephined 10 hours after admission. Dura mater bulged, but no clot found on opening it. Trephined again at corresponding point on opposite side, where large amount of clot was found extending over left hemisphere. Condition did not change, and patient died 3 hours after operation. P.M.—Linear fracture, extending from trephine hole on right side transversely across anterior part of middle fossa on that side, passing behind anterior clinoid process to orbital plate of frontal on left side for a distance of 2 inches. Large amount of black clot over left hemisphere. Contusion of under-surface left temporo-sphenoidal lobe.

10. Female, æt. 50. Fell down flight of stairs. Comatose on admission. Stertorous breathing. Hæmorrhage from right ear and nose. Ecchymosis of both lids. Protrusion of right eyeball. Temperature subnormal till six hours before death, when it commenced to rise, reaching 105·6° before, and 106·6° after death, which took place 10 hours after admission. P.M.—Three short fractures in base of skull each 2 inches long. (1) From crista galli outwards, across right orbital plate. (2) From foramen lacerum medium outwards, parallel to crest of petrous bone. (3) From foramen magnum outwards and backwards. Considerable hæmorrhage over surface of left frontal and temporal lobes, which were considerably lacerated and softened. Left ventricle distended with clot. Atrophic scirrhus of right breast.

## INJURIES TO CHEST, ABDOMEN, SPINE, AND PELVIS.

*Fractured ribs.*—Males 16, females 2. C. 18. Direct violence in 7; indirect in 11. Comminuted 2. First rib fractured once; 3rd twice; 4th four, 5th five, 6th ten, 7th eight, 8th nine, 9th seven, and 10th five times; 11th twice; 12th once.

*Complications.*—Hæmoptysis 1; emphysema of chest 5; pneumothorax 2; hæmaturia 1; injury to abdomen (vomiting) 1; scalp wound 2; wound of face 3; contusion of shoulder 1; crushed finger 1, toes 1; compound comminuted fracture of radius 1; fracture of radius and ulna 1; tetanus 1, male. Admitted for fractured ribs, due to his horse falling on him, and crushing 5th finger of right hand. Eleven days after admission stiffness of jaw commenced. Finger amputated. Spasms commenced ten days after amputation. Delirium for 3 weeks, then gradual recovery, Risus sardonius well marked. Temperature usually subnormal, never above 99°.

*Fracture of sternum.*—Male, æt. 50. Run over by cab four days previously. Attended as casualty patient, but refused to come in. Returned on account of pain. Transverse fracture of gladiolus just above 4th costal cartilages. Lower end of upper fragment displaced backwards. Deformity disappears on

lying down. Emphysema in immediate neighbourhood of fracture. Discharged cured in 16 days.

*Injuries to spine—*

*Concussion.*—Male, æt. 67. Fell down flight of stairs and remained at bottom all night, being unable to move. Admitted 15 hours after fall. Tenderness in upper dorsal and lower cervical regions. Legs paralysed. Tendon reflexes present; plantar and cremasteric absent; sensation normal. Respiration entirely diaphragmatic; lower ribs drawn in. Evacuations passed unconsciously; gradually regained power in legs and action of intercostals. Discharged cured in 26 days.

*Fracture.*—Males 5. U. 1, D. 4.

1. Male, æt. 27. Thrown out of a cart on to his back. On admission: Prominence of several lower dorsal and upper lumbar spines. Two lower dorsal spines, movable. Paraplegia from  $1\frac{1}{2}$  inches below umbilicus. Tendon reflexes absent. Plantar and cremasteric absent; epigastric present. Retention of urine. Incontinence of fæces. Plaster-of-Paris jacket applied. Cystitis and bed-sores developed. No recovery in motion or sensation in legs. Callus formed at site of fracture. Sent to infirmary 145 days after admission.

2. Male, æt. 50. Fell 12 feet from scaffold, striking back against top of a wall in his descent. On admission, 12 hours after accident: Paraplegia and loss of sensation up to 2nd costal cartilage. No abnormality in spine anywhere. Tenderness in lower cervical region. Reflexes abolished, except plantar, which are very slight. Incontinence of fæces, and retention of urine. Can move shoulders, but not elbows. Sensation absent from forearms, except on radial side. No cerebral symptoms. Temperature  $100.6^{\circ}$ . Difficulty of respiration and deglutition a few hours before death, which took place in 18 hours. Temperature rose to  $108.2^{\circ}$  before, and  $109^{\circ}$  after death. No post-mortem.

3. Male, æt. ? 72. Wheel of bus passed over abdomen. Admitted a few minutes after, but died before reaching ward. P. M.—Fracture of 9th to 12th ribs left, and 7th to 12th right. Bruising of pleuræ and small rupture of left. Oblique fracture, body of 12th dorsal vertebra, with complete separation. Contents of spinal canal entirely divided. Splintered fracture with complete separation at left sacro-iliac synchondrosis. Fracture of anterior superior spine of ilium and portion of crest on right side. Subperitoneal extravasation around kidneys. Old scrotal hernia right, containing cæcum and vermiform appendix.

4. Male æt. 54. Fell 10 feet on to his back 1 hour before admission. Numbness in abdomen and extremities. Legs paralysed and arms partly so. All tendon reflexes absent, also superficial reflexes except plantar, which were brisk. Sensation blunted over trunk and legs below nipple line, and forearms, especially on ulnar side. No irregularity of spine. Tenderness in cervical region. Retention of urine. Respiration diaphragmatic. Partial priapism. Died on 2nd day, with difficulty of breathing and swallowing at the last. Temperature normal throughout. P. M.—Spine of 4th cervical vertebra broken off by symmetrical fracture, through laminae. The body was loose, so that on the head falling back, it started forwards. Spinal cord showed contusion at this spot, and on section, a central hæmorrhage. Dura mater uninjured.

5. Male, æt. 52. Fell down flight of stairs, pitching on head and flexing forcibly

his cervical spine half an hour before admission. Complete paraplegia and loss of sensation up to nipple line. Intercostals paralysed. All reflexes absent except epigastric. Retention of urine and incontinence of fæces. Arms partly paralysed, and sensation absent from forearms. No irregularity of spine. Tenderness in lower cervical region. Attack of dyspnœa 12 hours after admission, became cyanosed and died. Temperature subnormal. P. M.—Fracture of spines and laminae of 5th and 6th cervical vertebræ, the bodies of which were completely separated. Dura mater uninjured, spinal cord for  $1\frac{1}{2}$  inches represented by gelatinous pulp, discoloured by hæmorrhage.

*Injuries to abdomen—*

*Punctured wound, &c.*—Male, æt. 15. Stabbed with pocket knife (3 inch blade) by another boy; walked to hospital. Half-inch wound, about midway between umbilicus and left anterior superior spine. Long tag of omentum prolapsed. No symptoms. Wound enlarged, and region explored. Omentum cleaned and returned. Glass drainage-tube inserted for 24 hours. Peritoneal and skin sutures. Healing by first intention. \*Left hospital cured in 15 days.

*Ruptured intestine.*—Male æt. 61. Abdomen crushed between two colliding railway trucks. On admission, slight shock. Abdominal walls rigid, but no other symptom. Empty thickened sac of old left inguinal hernia. Vomiting commenced in 21 hours, rapidly becoming fæcal. Hernial sac explored, and found to contain fluid fæces. General condition prevented further exploration. Patient died 26 hours after admission. P. M.—General acute peritonitis. One and a half pints of semi-purulent fluid in abdominal cavity. No rupture to be discovered, with intestines *in situ*, but on removal and distension with water, a rupture  $\frac{3}{8}$  inch long was discovered in long axis of small intestine, opposite mesenteric attachment, 130 inches from the pylorus.

Male, æt. 23. Badly nourished man knocked down and rendered senseless by kick in abdomen from horse 2 hours before admission; stomach empty at time. On admission: Much collapsed with flexed thighs, rigid and tender abdomen, bruise to left of umbilicus. Temperature subnormal. Vomited brown fluid 2 hours after admission and again in eight hours, when temperature was  $101^{\circ}$ , and pulse 110 and weak. Abdominal section in mid-line. Dirty red fœtid fluid in peritoneal cavity. Bruising of omentum. Longitudinal rupture in transverse colon with ragged edges  $\frac{3}{4}$  inch in length. Peritoneal coat separated from bowel for  $\frac{1}{2}$  inch all round rupture, and also at a point just to right of, and below it, for one square inch. Clamps applied on each side of the rupture, which was closed with double row of Lembert's sutures. A piece of omentum then being sutured over site of rupture. Abdominal cavity irrigated with warm boracic. Peritoneal and skin sutures. Died 12 hours after operation from collapse. P. M.—No peritonitis. Wounded part of colon removed and found to resist a much stronger pressure of both air and water than it would be subjected to in life. No extravasation. No other injury.

*Injury to kidney.*—Male, æt. 17. Kicked by horse in left loin. On admission suffering from shock, tenderness in left loin. Hæmaturia for 5 days. Vomiting. Abdomen rigid on left side, and slight dulness on percussion. Discharged cured in 22 days.

*Ruptured liver.*—Male, æt. 32. Run over abdomen by heavy cart. Collapsed



on admission, and died very shortly afterwards. P. M.—Four pints of fluid blood in abdominal cavity. Rupture almost completely divided right lobe of liver from before backwards.

*Injuries to pelvis—*

*Hæmatoma.*—Male æt. 14. Crushed between tram and pole of brewer's dray. Severe shock on admission, and large hæmatoma over rami of pubes and ischium, groin, and iliac fossa of left side. Limb cold. No pulsation in tibials. Foot became gangrenous, and hæmatoma suppurated and was opened. Leg amputated in upper third 95 days after admission. Discharged cured 40 days after amputation.

*Fracture.*—M. 2, F. 1. D. 3.

Male, æt. 9. Wheel of brewer's dray passed over pelvis. Extreme collapse. Wound of right thigh and scalp wound over left eye. Symphysis pubis separated to extent of 1 inch. Right side of pelvis movable. Died in 16 hours. P. M.—Symphysis pubis separated for 2 inches. Horizontal ramus of pubis fractured on each side and left sacro-iliac joint loosened.

Female, æt. 67. Run over by brewer's dray. Moribund on admission. Scalp wound over right eye, down to bone. Pelvis felt like mass of loose bones. Left femur fractured in upper third. Five or 6 ribs broken on each side. Died very shortly after admission. P. M.—Fracture of 3rd to 10th ribs right, and 5th to 8th left. Both ilia fractured close to sacrum. Fracture of ramus of pubis on each side. Fracture, left femur, 2 inches below trochanters. Extravasation round kidneys.

Male, æt. 38. Caught between platform and foot-board of train, and rolled round and round. Fracture of pelvis made out in front. Catheter drew off pure blood. Perineal swelling increasing. Incised, and large hæmatoma opened, in which fracture of right pubic ramus could be felt. Sank steadily and died in 15 hours. P. M.—Hæmorrhage round bladder extending also up and out over psoas muscles. Peritoneum uninjured. Bladder healthy containing 4 ounces of clear urine. Urethra torn completely across at its membranous part. Symmetrical fracture of pelvis on each side of symphysis, through obturator foramina; that on left side comminuted and had caused the rupture of urethra. Left eye excised many years ago. Left optic nerve half size of right, and optic tract also smaller. Diminution in size of right occipital lobe at angular gyrus.

*Separation of symphysis pubis and left sacro-iliac joint.*—Male, æt. 10. Run over by omnibus. Examined under chloroform. Left side pelvis very movable. Large hæmatoma left side of lower abdomen extending to perinæum. Discharged cured in 34 days.

## INJURIES TO THE UPPER EXTREMITIES.

*Wounds—*

*Forearm.*—Males 8, females 1. C. 9. With glass in 4; circular saw 1; chisel 1; run over 1; ? cause 1.

*Complications.*—Radial artery divided in 5, ulnar in 5. Median nerve divided in 2, injured in 1; ulnar nerve divided in 1. Laceration of muscles in 1. Wrist-



joint opened in 1. Division of tendons: Flexor carpi ulnaris twice, flexor carpi radialis twice, flexor longus pollicis once, palmaris longus once, flexor sublimis dig. once, two tendons of the same in one other; flexor profundus dig. in 1; two tendons of same in one other; incomplete division of flexor sublimis dig. in 1; one case admitted 2 days after injury with hæmorrhage from divided radial, previously treated at another hospital with a pad. All tendons and nerves sutured, arteries ligatured.

*Hand.*—Males 6, females 1. C. 7.

Six lacerated, 1 incised. Division of extensor tendons in 1. One treated by irrigation, 2 with bath of perchloride of mercury, 1 boracic. Plastic operation in 1, abdominal flap raised and sutured to palm; flap separated from abdomen 28 days later; good result. Bullet wound of palm 1; bullet removed from lower part of front of forearm.

*Dislocations*—

*Humerus.*—(a) *Subcoracoid.*—Males 5, females 1. C. 3, U. 3. Right 3, left 3. All by indirect violence. Three reduced by manipulation under anæsthetic, duration 8, 26, and 35 days respectively. Attempted reduction by manipulation and extension in 2, duration 36 and 56 days. No attempt in one; duration 4 months, as movements at shoulder were very good.

(b) *Subglenoid.*—Males 2, females 1. C. 2, U. 1. Right 1, left 2. All by indirect violence. Two reduced by manipulation under anæsthetic; duration 2 and 5 days. Attempted reduction by manipulation and extension in one; duration 5 weeks.

*Compound dislocation of wrist.*—Male, æt. 53. Machinery accident. Left hand reduced to a pulp, but no fracture. Carpal bones separated and wrist-joint opened. No hæmorrhage. Amputation in middle of forearm. Discharged cured in 19 days.

*Compound dislocation of fingers.*—Males 2. C. 2. Circular saw 1; hydraulic capstan 1. Both metacarpo-phalangeal. In one two distal phalanges of another finger cut off. Amputation and trimming in each case; part of metacarpal bone removed in one. Lacerated wounds of hand in both.

*Old dislocation of elbow.*—Male, æt. 32. Four months duration. Both bones displaced outwards. Movements limited. Excision of lower end of humerus by transverse incision and division of olecranon, which was wired afterwards. Ulnar nerve divided. Left hospital without permission. Arm improved.

*Fractures*—

*Scapula.*—Male, æt. 57. Direct violence. Vertical fracture about  $1\frac{1}{2}$  inches from vertebral border.

*Clavicle.*—Males 3. C. 2, D. 1. Right 2; left 1. Direct violence 2; indirect 1. Comminuted 1.

*Fatal case.*—Male, æt. 62. Wheel of heavy waggon passed over chest. Collapsed on admission. Small scalp wound. Fracture of left clavicle and ribs. Bronchitis. Developed delirium tremens on 2nd day. Cyanosis and great difficulty in breathing. Bled to 8 oz. Died on 5th day. P.M.—Fracture of left clavicle at junction of middle and inner thirds, and 1st and 2nd left ribs near spine, and 3rd to 6th about centre. Pleura wounded by 5th. Two pints of blood in pleural cavity. Pneumonic consolidation of right base.

*Humerus—*

(a) *Simple*.—Males 5, females 1. C. 6. Right 5; left 1. Direct violence in 5; indirect in 1. Shaft 2; upper third 1; transverse above condyles 2; surgical neck, comminuted of shaft, and transverse above condyles in 1. Fracture of ribs, right and left, with emphysema of chest in 1; fractured radius and ulna in 2; radius in 1; compound fracture of metacarpal bone of thumb in 1; lacerated wound of arm in 1.

(b) *Compound and compound comminuted*.—Males 5, females 1. C. 6. Right 2; left 4. By direct violence 5; indirect 1. Three extending into elbow-joint, all comminuted, one T-shaped. Shaft 2; surgical neck 1. All treated antiseptically.

(c) *Compound refracture*.—Male, æt. 27. Left Cambridge Hospital 1 week; after simple fracture of left humerus. Fell on hand, refracturing bone in lower third of shaft. Considerable mass of callus round lower end of humerus. Small wound  $1\frac{1}{2}$  inches above internal condyle. Oblique fracture of humerus at same level.

(d) *Ununited fracture of shaft*.—Male, æt. 54. Fracture 16 months previously. Treated first with wooden, and then with plaster-of-Paris splints, at another hospital, for 3 months after injury. Seven months after injury ends of bone were pegged here, and limb put up in plaster of Paris. No union resulted. Four months later ends of bone were freshened, dovetailed, and wired together. Slight union resulted. On readmission no union. Drainage-tube passed through arm at site of fracture. Later, wire sutures removed from bone, ends freshened, and an ivory peg inserted obliquely through them; the periosteum from a young cat was wrapped round the bone at site of fracture. Some suppuration followed. Incisions. Discharged in 225 days with some union, but not firm.

*Separation of lower epiphysis of humerus*.—Female, æt. 2. Admitted only for œdema of arm.

*Forearm—*

*Radius and ulna*.—Male, æt. 16. Bones broken in lower third. Admitted for shock.

*Compound*.—Males 4. C. 3, R. 1. Left 4. All by direct violence. Middle third 3; lower third 1. Cellulitis followed by erysipelas in 1, admitted 5 days after the injury, sinus leading to caries of radius on discharge. Extensive laceration of muscles and skin of forearm, with compound fracture of metacarpals, and wrist-joint opened in 1, in which forearm was amputated in upper third. Other cases treated antiseptically.

*Ulna*.—Female, æt. 69. Fracture in upper third by direct violence. Also fracture of external condyle of humerus.

*Compound*.—Males 2. C. 2. Right 1; left 1. By direct violence 1; indirect 1. Shaft 1. Below coranoid process 1.

*Olecranon*.—Male, æt. 44. Simple fracture of right olecranon by direct violence. Considerable effusion into joint, and separation of fragments. Chip broken off left olecranon and wound into bursa. Three days after admission right olecranon wired, longitudinal incision over back of joint, arm put up in extended position, in plaster of Paris. Healed by first intention. Passive

movements commenced on 17th day. Discharged on 24th day, with fair movement and good union.

*Compound.*—Male, æt. 25. Small clean wound; little separation between fragments. Vertical incision and wiring of fragments day after admission. Joint washed out with solution of perchloride of mercury. Drainage-tube used. Put up in extended position in plaster of Paris. Passive movements commenced in about 20 days. Discharged in 22 days. Good union and movement; small granulating surface.

*Old fracture of olecranon.*—Male, æt. 42. Five months duration. Fibrous union with  $\frac{3}{4}$  inch separation. No pronation or supination, and only slight flexion and extension. Limb wasted. Vertical incision; ends freshened and wired. Put up in extended position in plaster of Paris. Cellulitis of elbow, requiring several incisions. Irrigation. On discharge good union, incisions healed, elbow stiff. Subsequently readmitted for massage, and fair movement obtained. Left hospital with useful arm.

*Hand.*—Female, æt. 16. Crushed hand between steam rollers. Metacarpals and phalanges fractured. No wound. Hand bloodless and cold. Amputation of forearm.

*Compound.*—Males 11, females 1. C. 12. Amputation of forearm in 2, fingers in 5. Wiring of metacarpal of thumb in 1. Suturing of tendons in 1.

*Multiple fractures.*—Male, æt. 47. Thrown by moving train against a wall. On admission collapsed. Large scalp wound exposing bone; extensive lacerated wounds of right axilla, arm, and chest. Fractures of right humerus, clavicle, scapula, and ribs. Died from collapse day after admission. P.M.—Fracture of all left ribs. Subpleural hæmorrhage. Compound comminuted fracture of upper two thirds left humerus. Acromion and clavicle also fractured.

*Partial rupture of biceps.*—Male, æt. 59. Wheel of van passed over left arm. Much extravasation in lower third of arm. Inner part of biceps ruptured. Very feeble pulsation in vessels of forearm. Pulsation gradually became stronger. Discharged cured in 15 days.

## INJURIES OF THE LOWER EXTREMITIES.

*Contusions.*—Males 4, females 4. C. 8. Buttock 6, leg 2. Amputation of thigh in 1.

Male, æt. 28. Left leg hanging over a cart was crushed by tail-board of another in a collision. On admission left popliteal space and calf of leg very tense. Ecchymosis of skin. No pulsation in tibials. Foot cold. Exploratory incision in popliteal space on second day. Vessels found uninjured. Laceration of muscle. Foot and leg gradually became gangrenous. Amputation in lower third of thigh on fourth day. Necrosis of end of femur. Removal of  $1\frac{1}{2}$  inches of necrosed bone 72 days after amputation. Stump firm on discharge 105 days after admission.

*Wounds.*—Males 25, females 3. C. 28. Erysipelas in male, æt. 42, with gunshot wound of calf (see Special Table). Primary amputation of leg in female,

æt. 31, with extensive stripping of skin. Amputation of leg for secondary hæmorrhage in male, æt. 14, with punctured wound in middle of anterior surface of leg penetrating the interosseous membrane. Sharp hæmorrhage on 5th day. Wound opened up, both ends of divided (?) anterior tibial artery tied. Posterior tibial also tied through separate incision. Forceps left on several deep bleeding vessels. Second attack of hæmorrhage on 18th day, half a pint of blood lost. Wound deep and sloughy. Leg amputated in upper third. Wound suppurated. Left hospital with stump healed on 49th day.

*Dislocations—*

*Hip.*—Female, æt. 3½. Fell out of bed. Dorsal dislocation of left hip; 1 inch shortening. Reduced by traction in flexed position, under chloroform.

*Astragalus.*—Female, æt. 22. Fell 5 ft., alighting on her right foot. Dislocation of astragalus forwards and outwards, with fracture of its neck. Reduced under anæsthetic, head of bone remaining in front of ankle-joint. Left hospital, cured, in 28 days. Fair movement at ankle.

*Old subastragloid dislocation.*—Male, æt. 22. Admitted for ? recent injury to deformed foot.

*Fractures of femur—*

*Simple.*—Males 52, females 17. C. 67, R. 1, D. 1. Right 38; left 31. Caused by direct violence 29; indirect 39; muscular action? 1. In upper third 6; middle third 25; lower third 6; junction of upper and middle thirds 21; middle and lower 9. Double fractures in 2. One comminuted; 1 T-shaped into knee-joint; 2 greenstick; 42 transverse; 23 oblique.

*Complications.*—Simple fracture of tibia and fibula in 1; compound fracture of tibia and fibula in 1; compound fracture of humerus in 1; hæmatoma of thigh in 1; rupture of external lateral ligament of knee in 1; retention of urine and cystitis in 1; scarlet fever in 1; measles in 1; pneumonia in 1.

*Treatment.*—Fourteen treated with plaster-of-Paris splints only; 17 with anterior plaster-of-Paris splint and long outside; 2 with plaster of Paris and extension; 35 with plaster of Paris, long outside, and extension; 1 with gutta-percha splint, æt. 3 weeks. Delayed union in 1, 35 days; fibrous union in 1, æt. 57; union not firm on discharge in 2, after 49 and 109 days in hospital. Angular deformity in one, readmitted 3 weeks afterwards for deformity and incomplete union. Straightened under anæsthetic, and discharged with firm union, but still some deformity. Amount of shortening noted in 36 cases only. None in 18; 1½ inches in 1; 1 inch in 3; ¾ inch in 3; ½ inch in 6; ¼ inch in 2; ⅛ inch in 3.

*Fatal case.*—Male, æt. 51. Knocked down by locomotive engine. Transverse fracture of left femur at junction of upper and middle thirds. Rupture of external lateral ligaments of right knee. Wound of right cheek. Fracture of 1st right metacarpal. Hæmatoma of left buttock. Temperature rose on 3rd day, and remained between 101° and 103°, till death on 7th day. Wandering at night. Friction sounds right side of chest. P.M.—Pneumonic consolidation of right upper lobe. Lymph on surface. Much effused blood in pelvic subperitoneal tissue, and upper part of left thigh.

*Compound.* Male, æt. 52. Kicked by horse on left thigh. Oblique fracture in middle of shaft of left femur. Small clean wound on anterior surface of



thigh, probably produced by sharp lower end of upper fragment. Wound washed out with perchloride of mercury and dressed with iodoform. Anterior plaster-of-Paris splint and long outside and extension. No rise of temperature. Dressed in 45 days, when wound had healed and femur firmly united. Left hospital cured in 54 days;  $\frac{3}{8}$  inch shortening.

*Compound comminuted.*—Males 2, females 1. Left 2, right and left 1.

1. Male, æt. 36. Wheels of heavy van passed over both thighs. Compound comminuted fracture in upper third of left femur, with two wounds on inner surface of limb, leading into large ragged cavity full of blood-clot, and lacerated muscle. Cavity syringed out with perchloride-of-mercury lotion, and drainage-tube inserted; antiseptic dressings. Transverse fracture in middle of right femur. Both limbs put up in anterior plaster-of-Paris splint, long outside and extension. Cystitis. Large abscess on outer side of left thigh, 16 days after admission. For last week, temperature between 100° and 105°. No rigors. Died on 46th day, from exhaustion. P.M.—Seats of fracture healthy; simple one united, but no union of compound. Hypostatic congestion of lower lobes of lungs. No infarcts. Small abscess containing foetid pus on surface of left kidney. Two or three small phosphatic calculi in bladder, which showed signs of old cystitis. Spleen soft and large. Liver fatty. ? Pyæmia.

2. Male, æt. 40. Kicked by horse on left thigh, and wheel of cart passed over leg. On admission collapsed. Compound comminuted fracture just above condyles. Wound in front of thigh. Transverse fracture at upper end of tibia. Day after admission wound opened up, and loose fragments removed. Antiseptic dressing and long outside splint. Never recovered from shock, and died in 33 hours after admission. No post mortem.

3. Female, æt. 71. Jumped out of first-floor window. On admission extreme shock; compound comminuted fracture lower end of each femur into knee-joints. Wound on outer side of each external condyle. Transverse fracture of right tibia just below tubercle. Right Collis's fracture. Fracture of nasal bones and large wound of forehead. Wounds syringed with perchloride-of-mercury lotion and dressed with iodoform. Limbs put up in plaster-of-Paris and long outside splints, under anæsthetic. Died a few hours afterwards from shock. P.M.—Compound comminuted fracture into each knee-joint. Comminuted fracture of left patella. Each joint full of blood.

*Neck of femur.*—Males 7, females 12. C. 16, D. 3. Intra-capsular 10; extra-capsular 5; mixed 4; impacted 10; unimpacted 9.

*Fatal cases.*

1. Female, æt. 76. Fall on left hip. Leg tied over a pillow. Two attacks of stertorous breathing and cyanosis on 14th day, when patient died. P.M.—Complete fracture of neck of femur within capsule, which was not injured. No apparent cause for death.

2. Female, æt. 75. Fall on left hip. No splint. Died on 13th day from exhaustion and bronchitis. P.M.—Intra-capsular fracture of neck of femur. No impaction, but locking between irregular fractured surfaces. Lungs emphysematous and congested at bases, with patches of broncho-pneumonia.

3. Female, æt. 75. Fall on right hip. Plaster-of-Paris and long outside splints. Died on 9th day from exhaustion and bronchitis. P.M.—Extra- and



intra-capsular fracture of neck. Portion of bone, including small trochanter, posterior inter-trochanteric line, and part of great trochanter, completely separated. Extreme collapse of bases of lungs, with emphysema of edges of upper lobes, which were full of fluid.

*Impacted fracture of great trochanter.*—Male, æt. 28. Fall on ice, striking right hip. Presented all signs of dorsal dislocation. Attempted reduction. Exploratory incision revealed nature of injury.

*Fractures of patella.*—Males 11, females 8. C. 17, R. 1, D. 1. Right 9, left 10; transverse 18, oblique 1. By direct violence in 8, muscular action in 11. One refracture after 11 months, 1 old fracture of 18 months duration. Fatal case died from intestinal obstruction.

*Treatment.*—No operation in 7, of which 1 was treated with plaster-of-Paris splints only, 2 with Mac Intyre, and 1 with back splint and ice-bag, followed by plaster-of-Paris splints; 2 with Mac Intyre and ice-bag; and 1 plaster of Paris and ice-bag.

Operation in 11 cases, of which 2 were wired by Kocher's method, a stout silver wire being passed through the joint behind fragments, and the ends twisted over a pad in front of patella. Wires removed on 28th and 31st days respectively; no suppuration. Union apparently bony in 1, fibrous with  $\frac{1}{8}$  inch separation in 1. Both left hospital in plaster of Paris, on 40th and 41st days.

Two treated with pins passed through quadriceps tendon and ligamentum patellæ, by Mayo Robson's method. Pins removed on 20th and 24th days respectively; no suppuration. Fibrous union with  $\frac{1}{4}$  inch separation in each case. Both left hospital in splints, in 28 and 58 days.

Two treated with pins passed one in front of each fragment, as close as possible to the bone (by Mr. Anderson's method). Pins approximated as in Mayo Robson's method. Pins removed on 16th day in 1, in which union was apparently bony. Left hospital in splint in 46 days. The other case left hospital against advice, on 7th day, in Mac Intyre's splint; pins removed in out-patient room 2 days afterwards. Readmitted in 12 days with small abscess, superficial to patella. Union firm and fibrous.

Six cases treated by the open method.

1. Male, æt. 48. Transverse fracture 7 days before admission; considerable effusion into knee-joint. Plaster-of-Paris splint for 7 days. On 8th day joint opened, blood-clot washed out with perchloride of mercury lotion. Fragments approximated by passing a silver wire round them and twisting it in front. Small drainage-tube on outer side of joint. Iodoform dressings. Wire removed on 42nd day. Union firm, but fibrous. Left hospital in plaster-of-Paris splints in 76 days.

2. Male, æt. 26. Considerable effusion into knee. Mac Intyre and ice-bag for 48 hours, then joint opened by vertical incision and washed out with 1 in 2000 solution of perchloride of mercury. Portion of quadriceps tendon, torn from upper fragment and still attached to the lower, lay between fractured surfaces. Fragments bored obliquely and united with double silver wire suture. Small piece of oil silk as a drain, iodoform dressings and plaster-of-Paris splint. Left in splint on 18th day, wound healed and union apparently firm.

3. Male, æt. 41. Much effusion into knee. Mac Intyre and ice-bag 5 days,

then joint opened by vertical incision and washed out with 1 in 2000 solution of perchloride of mercury. Torn ends of aponeurosis found to be inverted so as to cover fractured surfaces. Fragments bored obliquely and wired with double silver wire suture. Drainage-tube inserted on outer side of joint. Iodoform dressings and plaster-of-Paris splint. Drainage-tube removed on following day; some superficial suppuration. Wire removed in 35 days; union firm and apparently bony. Left hospital in 49 days with superficial granulating wound.

4. Female, æt. 47. Considerable effusion into knee. Five days after admission vertical incision. Torn ends of aponeurosis inverted over fractured surfaces. Joint irrigated with 1 in 4000 solution of perchloride of mercury. Fragments bored and united by stout silver wire. No drainage-tube. Cyanide dressings and plaster-of-Paris splint. Healed by first intention. Left hospital in 48 days; union apparently bony, leather splint.

5. Male, æt. 29. Wired by Kocher's method 4 months ago. Left off splint 1 week when he fell, striking same knee. Considerable effusion in knee. MacIntyre and ice-bag for 48 hours, then attempt to pass wire by Kocher's method failed, owing to union of upper fragment with femur. Four days afterwards joint opened by horizontal incision, upper fragment separated from femur. Joint irrigated with 1 in 2000 solution of perchloride of mercury. Fragments bored obliquely and wired with two silver sutures. Strip of oil silk as drain, cyanide dressings, and plaster-of-Paris splint. Some superficial suppuration. Left hospital in 56 days with plaster-of-Paris splint; union firm and apparently bony.

6. Male, æt. 51. Fracture of 18 months duration; more separation since a fall on day of admission, when there was an interval of about  $2\frac{1}{2}$  inches. Joint opened 12 days after admission, fractured surfaces freshened. Tenotomy of quadriceps tendon in order to allow of approximation of fragments, which were wired with 3 silver sutures. Joint irrigated with boracic lotion. Iodoform dressings, and drainage-tube on each side. Plaster-of-Paris splint. Healing by first intention. Tubes removed in 17 days. Left hospital in 61 days; firm, and apparently bony, union.

*Fatal case.*—Male, æt. 49. Admitted with transverse fracture of left patella and treated with MacIntyre and ice-bag. Distension of abdomen commenced on 3rd day, not relieved by enemata or purgatives, but rapidly increased. Vomiting on next day, when patient became collapsed, and died. History of "diarrhœa" for 2 or 3 years. P.M.—Distension of small intestine and colon as far as middle of descending portion, where there was mechanical obstruction, from this spot the colon was collapsed and narrowed as far as commencement of rectum. Wall of this portion of gut measured  $\frac{1}{4}$  inch in thickness. On microscopic examination it proved to be caused by great thickening of muscular coat and submucous tissue. No sign of new growth.

*Fractures of tibia and fibula.*—Males 92, females 27. C. 118, D. 1. Right 68, left 52 (both legs in 1 case). By direct violence in 23, indirect 93, undetermined 2. Transverse 47; oblique 35; comminuted of tibia 7, of fibula 4; Potts' 29; tibia fractured in two places in 2; upper third 3; middle third 18; lower third 69.

*Complications.*—Rupture of urethra 1 (catheter tied in for 4 days); delirium tremens in 1; umbilical hernia 1 case, radical cure, peritonitis, and death (see

Hernia Table); traumatic delirium in 1; pneumonia in 1; bronchitis in 1; gout in 1; wound of leg in 1; hæmatoma of leg in 1; erysipelas of fractured leg in 2 (admitted with the rash).

*Treatment.*—All with plaster-of-Paris splints except 1, with erysipelas of leg, put on Neville's splint, and 2 in which amputation of thigh was performed: 1 for extensive comminution and threatening gangrene, and 1 after incisions for cellulose-cutaneous erysipelas, with which patient was admitted.

*Compound.*—Males 16, females 4. C. 17, D. 3. Right 9, left 13 (1 double). By direct violence in 15; indirect in 5. Comminution in 7 (fibula only in 1); transverse 2; Potts' 1; others oblique. In upper third 1; middle third 7; lower third 13.

*Treatment.*—One case amputated in lower third of thigh; 1 case through knee-joint; 4 cases in upper third of leg (1 two days after admission). Tibia wired in 1. Thirteen cases washed out with 1 in 2000 Hyd. Perchlor. and dressed antiseptically; 12 put up in plaster-of-Paris splints, 1 in Neville; fragments of loose bone removed in 2 cases.

*Complications.*—Simple fracture of tibia and fibula in 1; concussion in 1; scalp wound in 1; hæmatoma of ankle in 1; perityphlitis in 1; delirium tremens in 1; necrosis in 1; union weak on discharge in 4, in 2 of which necrosed bone not separated.

#### *Fatal cases.*

1. Male, æt. 58. Run over by waggon. Extensive compound comminuted fracture of right tibia and fibula, 3 inches of tibia projecting from wound. Foot cold. Amputation in upper third of leg. Died from shock 18 hours after amputation. P.M.—Emphysema of lung; cirrhosis of liver.

2. Male, æt. 38. Run over by heavy cart. Compound fracture of left tibia and fibula in lower third; tibia transverse, fibula comminuted. No pulsation in tibials. Fragments removed, wound washed out with 1 in 2000 Hyd. Perchlor. Antiseptic dressings and Mac Intyre's splint. Signs of commencing gangrene in foot next day. Refused amputation, but consented on 3rd day, when leg was amputated in upper third. Posterior tibial vessels ruptured, anterior normal. Became very delirious after operation, and died in 24 hours. P.M.—Organs normal; no other injury.

3. Female, æt. 60. Fall in street with foot under her, walked some distance afterwards. On admission compound Pott's fracture, transverse wound over internal malleolus, lower end of tibia protruding and very dirty, as if walked upon in mud. Joint washed out with 1 in 40 carbolic. Antiseptic dressings and plaster-of-Paris splints; wound became sloughy and cellulitis spread up the leg. Transferred to Anne Ward on 4th day; refused to have leg off, but consented 3 days later, when leg was amputated in upper third. Flaps sloughed; temperature high and irregular, 100° to 106°. Rigors. Died 9 days after amputation. P.M.—Hypostatic pneumonia, both lungs; organs soft and decomposed; no infarcts.

*Tibia.*—Males 36, females 12. C. 48. Right 22, left 26. By direct violence in 11; indirect in 37. In upper third 4; middle third 13; lower third 28. Internal malleolus 2. Vertical fracture of head into knee-joint 1, the fragment consisting of the outer tuberosity and part of the tubercle. Direction of fracture transverse in 32, oblique in 10. Comminuted 2; greenstick 3.

*Complications.*—Simple comminuted fracture of humerus, with much subcutaneous laceration in 1, amputation in upper third of arm; synovitis of knee in 1; broncho-pneumonia in 1.

*Treatment.*—Plaster-of-Paris splints in all; 1 case, with synovitis of knee, treated at first upon a Mac Intyre. Delayed union in male æt. 47; not quite firm on discharge on 50th day.

*Compound.*—Female, æt. 53. Fell with right leg under her. On examination transverse fracture at junction of middle and lower thirds of right tibia; small wound on front of leg, communicating with fracture. Washed with 1 in 2000 perchloride-of-mercury lotion, dressed with cyanide, and put up in plaster-of-Paris splints. Discharged in 29 days; wound healed, good union, but not quite firm.

*Fibula.*—Males 17, females 3. C. 20. Right 9, left 11; all in lower third. By direct violence in 1, indirect violence in 19. In 5 cases there was rupture of the deltoid ligament and typical displacement of Potts' fracture. All treated with plaster-of-Paris splints.

*Os calcis.*—Male, æt. 53. Fall (?) 30 feet, alighting on heels. Vertical fracture of left os calcis, separating the posterior inch of the bone; no displacement. Plaster-of-Paris splint applied. Left hospital in 17 days.

*Compound comminuted fracture of metatarsus.*—Male, æt. 26. Crush of right foot by wheel of tramcar; much laceration. Incision day after admission; mercurial bath for 10 days; modified Chopart's amputation 41 days after admission, and Syme's 4 days later, owing to sloughing of flaps and pus burrowing up sheaths of Peronei tendons.

*Phalanges (compound comminuted fracture).*—Males 4. C. 4. Amputation at metatarso-phalangeal joint in all.

## SPECIAL TABLES.



SPECIAL TABLE I.—A. (*Strangulated*

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Labourer	M.	38	R.	2 years	6 hours	? Enterocele
2	Carman	M.	48	L.	6 years	48 hours	? Epiplocele
3	Plasterer	M.	20	R.	8 years	3 hours	? Enterocele
4	Leather dresser	M.	46	R.	10 years	2 days	? Entero-epiplocele
5	Messenger	M.	58	R.	16 years	"	"
6	Brush maker	M.	33	R.	4 years	3 hours	"
7	Carpenter	M.	60	R.	2 years	48 hours	? Enterocele
8	Park-keeper	M.	32	R.	4 years	3 hours	"
9	Labourer	M.	28	R.	2 days	12 hours	"
10	Nil	M.	5	R.	Several hours	Several hours	"
11	Malt roaster	M.	41	R.	2 hours	2 hours	"
12	Nil	M.	5 weeks	R.	Several hours	Several hours	"

B. (*Strangulated Inguinal Hernia. Reduction*

13	Labourer	M.	52	L.	30 years	30 hours	? Entero-epiplocele
14	Labourer	M.	35	R.	20 years	6 hours	Enterocele

*Inguinal Hernia. No operation.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag followed by taxis; new truss	1	C.	Had worn truss till 14 days ago, when it broke.
Ice-bag followed by taxis; new truss	1	C.	Similar attack 2 years ago, reduced here in same way.
Ice-bag followed by taxis; new truss	1	C.	
Ice-bag followed by taxis	2	C.	Left hospital against advice with some adherent omentum in the sac.
Taxis; ice-bag; truss with hollow pad	28	C.	Some adherent omentum remained in sac. Subject of osteitis deformans.
Chloroform and taxis 15 minutes; new truss	11	C.	Similar attack 2 years ago, reduced here in same way.
Ice-bag; taxis under chloroform; double truss	6	C.	Also small reducible left inguinal hernia.
Truss	2	C.	Hernia went back spontaneously before patient arrived in the ward.
Ice-bag and taxis; truss	21	C.	Reduced spontaneously after a few hours. (Congenital hernia.)
Ice-bag; pad and bandage	2	C.	Hernia surrounded testicle.
Hot bath; ice-bag; truss	7	C.	Reduced spontaneously in 3 hours.
Hot lead lotion; circumcision	6	C.	Hydrocele below and tense hernia above. Reduced in few hours after admission. Very tight phimosis.

*under Anæsthetic. Subsequent Radical Cure.)*

Taxis under ether and partial reduction. Radical cure 37 days afterwards. Sac opened, large mass of adherent omentum ligatured in 7 portions with silk and removed; stumps returned. Sac dissected free, neck ligatured with silk, and fundus removed. Pillars of ring approximated with double silk suture; strip of oil silk as drain. Iodoform dressings	69	C.	Sutures removed on 9th day; wound healed almost entirely by first intention. Some orchitis on 4th day. Temp. never above 99°. Scar firm. Ordered a truss.
Ice-bag followed by taxis. Radical cure 9 days after. Congenital sac with elements of cord spread out on it. Sac dissected free and removed after ligature of its neck, a small portion being left to form a tunica vaginalis. Pillars of ring sutured. No drainage tube. Iodoform dressings	23	C.	Healed by first intention. Scar firm. No protrusion. Ordered a truss.

*C. (Strangulated Inguinal Hernia. Congenital*

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
15	Carman	M.	46	L.	10 years	8 hours	Enterocoele (large intestine)
16	Cheesemonger	M.	34	R.	17 years	24 hours	Enterocoele
17	Milkman	M.	21	R.	9 years	2 hours	„
18	Labourer	M.	57	L.	10 years	22 hours	„
19	Railway porter	M.	50	R.	32 years	18 hours	Entero-epiplocele
20	Nil	M.	$1\frac{9}{12}$	R.	$1\frac{8}{12}$ years	36 hours	? Enterocoele

*and Funicular. Herniotomy with Radical Cure.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Chloroform followed by ether. Sac opened; stricture divided and gut reduced. Sac then divided across horizontally, and lower portion left to form tunica vaginalis. Upper part dissected free, puckered up by means of silk suture, and drawn into the inguinal canal to form a plug; ends of suture passed through pillars of ring and tied, thus fixing the plug in the canal. No drainage-tube. Continuous suture. Cyanide and mercurial dressings	25	C.	Congenital sac containing about 3 feet of congested small gut, and 3 or 4 ounces of serous fluid. Ecchymosis of mesentery at seat of constriction. Suture removed on 8th day. Wound healed by first intention. Firm mass can be felt in inguinal canal, occupying nearly its whole length. No protrusion. No truss ordered.
Sac opened, stricture divided, and gut reduced. Testicle, together with sac, dissected free, ligatured, and removed. Pillars of ring approximated with four sutures. Strip of oil silk as drain. Iodoform dressings	25	C.	Testicle small and soft, situated just outside external ring. Sac contained large gut and ? cæcum. Slight ecchymosis of walls. Sutures removed on 8th day. A little superficial suppuration. No protrusion. Small granulating surface on discharge from hospital.
Sac opened, stricture divided, and bowel reduced. Neck of sac ligatured and upper portion removed; lower left to form a tunica vaginalis. Iodoform dressings	13	C.	Coil of small gut tightly nipped and dark in colour, with adherent lymph on surface. Some orchitis 2 days after operation. A little superficial suppuration, due probably to urine in dressings.
Sac opened, stricture divided, and gut returned. Upper part of sac dissected free, neck twisted and fixed in inguinal canal by two sutures passed through pillars of ring. No drainage-tube. Cyanide dressings	13	C.	Had worn a truss for 10 years, which failed to control the hernia. Taxis under chloroform for one hour the night before admission. A rent 2 inches long was found on inner side of the sac. Bowel congested and ecchymosed. 6 to 8 ounces of serum and blood-clot in sac. Constriction not tight. Sutures removed on 6th day. Wound healed by first intention. No protrusion. Light truss ordered.
Sac opened, stricture divided, and gut reduced. Omentum ligatured in three portions, cut off, and stumps returned. Sac divided across horizontally; upper part dissected free and removed after ligature of neck; lower part left to form a tunica vaginalis. Pillars of ring sutured	13	C.	Very alcoholic subject. About 5 inches of congested bowel in sac. Sutures removed on 9th day. Wound healed by first intention. No protrusion. Light truss ordered.
Contents of sac reduced under chloroform, and radical cure proceeded with. Sac opened, dissected free, and removed after ligature of its neck. No drainage-tube. Cyanide dressings	25	C.	Hernia of funicular variety; sac only separated from testicle by a thin septum. Wound healed by first intention.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
21	Salesman	M.	30	R.	9 hours	9 hours	Enterocoele
22	Greengrocer	M.	23	R.	2 years	4 or 5 hours	„
23	Labourer	M.	38	R.	20 years	17 hours	Entero-epiplocele

*D. (Strangulated Inguinal Hernia. Congenital.*

24	Labourer	M.	57	R.	20 years	25 days	—
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*E. (Strangulated Inguinal Hernia. Acquired.*

25	Warehouseman	M.	39	R. and L.	30 years 25 years	48 hours	Epiplocele
26	Bricklayer	M.	36	R.	2 years	24 hours	Enterocoele



Treatment.	No. of days in hospital.	Result.	Remarks.
Sac opened, stricture divided (at internal ring), and gut reduced. Sac dissected free, and removed after ligature of its neck. Pillars of ring sutured. No drainage-tube. Cyanide and mercurial dressings	18	C.	Hernia of funicular variety. Sac communicated with tunica vaginalis by an opening $\frac{1}{4}$ of an inch in diameter. Wound healed by first intention.
Sac opened, stricture divided, and gut returned. Sac dissected free, and removed after ligature of its neck. No drainage-tube	16	C.	Funicular hernia. Sutures removed on 6th day. Wound healed by first intention.
Sac opened, stricture divided, and gut reduced. Omentum ligatured and cut off; stump returned. Sac dissected free, neck ligatured, and fundus removed. Pillars of ring sutured with two kangaroo tendons	13	C.	Knuckle of congested gut surrounded by omentum. Funicular hernia; sac communicated with cavity of tunica vaginalis by hole size of No. 1 catheter. Wound healed by first intention. Truss ordered.

### *Herniotomy, with Excision of Intestine.)*

Sac opened, stricture divided; 21 inches of gut excised, including about one inch of healthy gut at each end of gangrenous loop. Ends of gut sutured together by two rows of fine silk sutures, the mucous membrane being united by the first set, and the peritoneal surfaces by the second (Lembert's). V-shaped gap in mesentery sutured. Sutured gut left just outside neck of sac, which was lightly plugged with iodoform gauze	2	D.	Symptoms for 5 days. No treatment. On admission general condition very bad. Hernia size of cocoa-nut; skin red; gut grey and sloughing at seat of stricture; loop quite black, but still glossy; wound remained perfectly sweet. Vomiting ceased for several hours after operation, but then recommenced, and continued up till death on 2nd day from exhaustion. Fed per rectum. P.M.—About one pint of blood-stained serum in peritoneal cavity; no peritonitis; site of suture just above ileo-cæcal valve; good union; lumen small at site of suture; intestines above distended.
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### *Herniotomy, with Radical Cure.)*

Ice-bag for some hours, followed by operation. Sac opened. Inflamed strangulated omentum ligatured and cut off; stump returned. Sac dissected free, and cut off after ligature of its neck with catgut. Ring not sutured. No drainage-tube. Iodoform dressings	20	C.	Strangulation not tight, and no stricture needed division. Sutures removed on 8th day. Wound healed by first intention. No protrusion. Small reducible hernia on left side.
Chloroform. Sac opened, stricture at external ring divided, and gut returned. Sac dissected free, and removed after ligature of its neck. One suture used to approximate pillars of ring. Small drainage-tube. Cyanide and mercurial dressings	15	C.	Knuckle of deeply congested, but glossy, gut. Tube removed on 2nd day; sutures on 9th. Wound healed by first intention. Ordered a truss.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
27	Binder	M.	20	R.	3 hours	3 hours	Enterocoele
28	Cab-driver	M.	54	R.	10 years	7 hours	„
29	Labourer	M.	61	L.	8 years	36 hours	„
30	Teacher	M.	45	L. and R.	10—15 years	13 hours	Enteropiplocele
<i>F. (Strangulated Femoral)</i>							
31	Married	F.	36	R.	4 years	12 hours	? Enteropiplocele
<i>G. (Strangulated Femoral)</i>							
32	Married	F.	31	L.	1½ years	48 hours	Enterocoele
33	Married	F.	62	R.	10—12 years	48 hours	Enteropiplocele

Treatment.	No. of days in hospital.	Result.	Remarks.
Sac opened, gut reduced without division of stricture. Sac removed after ligature of its neck. Pillars of ring not sutured. Iodoform dressings	15	C.	Hernia appeared suddenly while walking. Sutures removed on 9th day. Wound healed by first intention.
Chloroform and ether. Sac opened, stricture divided, and gut returned. Sac dissected free, lower part removed, and upper puckered up by means of silk suture, and drawn into inguinal canal. Ends of suture passed through pillars of ring and tied, fixing the plug in the canal. Short drainage-tube. Continuous suture. Cyanide dressings	52	C.	Sac contained about 6 feet of small intestine, ecchymosed on surface. Lax hydrocele not interfered with. 3 hours after operation passed about a pint of dark fluid blood per rectum. Tube removed on 3rd day; sutures on 5th. Slight suppuration at upper part of wound. Small granulating surface on discharge from hospital. No protrusion. Firm plug felt in canal.
On dividing structures over neck of sac hernia slipped back readily. Sac removed after ligature of its neck. Two lipomata of cord, which overlapped the sac, were removed. Pillars of ring approximated by two silk sutures. No drainage-tube	18	C.	Taxis under chloroform before admission. Wound healed by first intention. Truss ordered.
Sac opened, stricture divided. Large mass of adherent omentum removed after ligature. Owing to distension of gut and oedema of its walls complete reduction impossible. Gut incised, and about 10 ounces of black blood escaped. Incision closed with five Lembert's sutures and gut reduced. Inguinal canal and pillars of ring closed with Lembert's sutures. Sac left <i>in situ</i> . Iodoform dressings	2	D.	Strangulated while at stool. Taxis by two doctors before admission. Sac very thick and adherent, and patient too feeble to allow of any longer operation for its removal. Slight distension of abdomen day after operation. Temp. 101.2°. No sickness. Delirious next day. Bronchitis and emphysema. No P.M.

### *Hernia. No Operation.)*

Taxis, after ice-bag, for 9 hours. Truss	15	C.	Portion of hernia remained in sac for some days after reduction of chief mass.
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### *Hernia. Herniotomy.)*

Chloroform. Sac opened, stricture divided, gut returned. Sac removed without ligature of its neck. No drainage-tube. Iodoform dressings	16	C.	Large quantity of serous fluid drained from abdominal cavity on opening sac. Sutures removed on 6th day. Wound healed by first intention. Truss ordered.
Sac opened, stricture divided. Omentum removed after ligature. Gut reduced just within internal ring. Sac left <i>in situ</i> . Drainage-tube	47	C.	Gut tightly nipped. Semi-gangrenous patches here and there. Discharge of faecal-smelling pus up till 10 days before patient left hospital, when discharge was quite sweet. Small sinus 1½ inches long, and apparently not connected with gut.

No.	Occupation.	Sex.	Age.	Side	Duration of hernia.	Duration of strangulation.	Structure of hernia.
34	Married	F.	48	R.	1½ years	24 hours	Entero-epiplocele
35	„	F.	44	R.	2 days	2 days	Epiplocele
36	„	F.	38	R.	3 years	24 hours	Entero-epiplocele
37	„	F.	34	R.	7 days	7 days	Enterocele
38	Single	F.	35	R.	1½ years	48 hours	„
39	Married	F.	62	R.	9 years	24 hours	Entero-epiplocele

Treatment.	No. of days in hospital.	Result.	Remarks.
Sac opened. Omentum removed after ligature. Stricture divided, and gut returned just within internal ring. Sac removed without ligature of its neck. Drainage-tube. Iodoform and mercurial dressings	96	C.	Omentum adherent to sac at one spot; tight strangulation; gut deeply congested. Tube shortened on 4th day and removed, with sutures on 9th. Fæcal discharge from wound on 12th day. 1 month after operation attacks of slight distension, pain, and vomiting; pus and blood per rectum. Fistula enlarged, and abscess discovered surrounding bowel; cavity drained, gradually filled up. On leaving hospital small fistula, with slight fæcal discharge every few days; healed in the intervals.
Sac opened, stricture divided. Omentum ligatured and cut off. Sac removed without ligature of its neck. Drainage-tube	19	C.	Omentum almost black, but not offensive. Tube removed on 3rd day. Wound healed by first intention. Light truss.
Sac opened, stricture divided. Omentum ligatured and removed. Gut reduced. Sac removed without ligature of its neck. Drainage-tube. Cyanide dressings	16	C.	Gut dark and œdematous. Large amount of serous fluid escaped from abdominal cavity. Tube removed on 6th day. Wound healed by first intention. Light truss.
Ether. Sac opened and stricture divided. Perforation in gangrenous gut sewn to edges of wound. Iodoform dressings	1	D.	Large umbilical hernia with good impulse. Right femoral hernia, skin red and boggy. Sac contained knuckle of perforated, gangrenous gut. Very little escape from artificial anus. Died from collapse 19 hours after operation. P.M.—Gangrenous portion, 1 inch long, 7 feet from ilio-cæcal valve; slight early peritonitis; numerous black extravasations in lungs, which were congested.
Sac opened. Gut sutured to edges of wound. <i>Operation for closure of artificial anus 5 months after admission.</i> —Abdominal section in mid-line; afferent and efferent portions of gut divided, and ends united by double row of silk sutures; cut ends of gut passing to internal abdominal ring invaginated and sewn up.	164	D.	Gut apparently beyond recovery; gave way on 3rd day. All fæcal matter escaped by artificial anus, setting up extensive eczema of abdominal wall. Never passed anything per rectum. Died on 5th day after closure of artificial anus. P.M.—Gangrene of stumps of intestine passing to internal abdominal ring; pelvic peritonitis.
Chloroform. Sac opened, stricture divided. Mass of omentum surrounding knuckle of gut. Omentum ligatured in several portions and cut off. Gut reduced. Sac removed without ligature of neck. No drainage-tube. Cyanide dressings	21	D.	Adhesions between omentum and neck of sac not disturbed. Passed about 1½ ounces of blood and mucus per rectum 3 hours after operation. Rigor next day. Bowels open on 4th day naturally. Wound healed by first intention. Died suddenly in attack of stertorous breathing while sitting up eating breakfast. No P.M. exam.



No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
40	Married	F.	68	L.	10—15 years	4 days	Entero-epiplocele
41	Single	F.	41	R.	3—4 months	5 days	Enterocoele

H. (*Strangulated Femoral Hernia.*)

42	Widow	F.	72	R.	3 years	3 days	Epiplocele
43	Married	F.	49	R.	15 years	2 days	„
44	„	F.	63	L.	12 years	16 hours	Entero-epiplocele
45	„	F.	35	R.	Many years	16 hours	„
46	,	F.	54	R.	14 years	3 days	„

Treatment.	No. of days in hospital.	Result.	Remarks.
Sac opened, stricture divided, small piece of omentum removed. Gut reduced. Sac left <i>in situ</i> . No drainage-tube	1	D.	Sac very thick, bowel rather doubtful. Gradually sank and died 8 hours after operation. P.M. — Great omentum firmly adherent in left femoral canal; dark portion of bowel, 4 inches long, situated 4 feet from commencement of jejunum; definite constriction at upper limit; no perforation, and gut probably recoverable; no peritonitis; œdema of lungs.
Ether. Sac opened, stricture divided. Gut left <i>in situ</i> . Upper part of wound sutured	1	D.	Symptoms 5 days. Gut black and grey at site of stricture. Adhesions disturbed as little as possible. Frequent fecal vomiting. Died 4 hours after operation. P.M.—Small knuckle of ashen-grey gut in left femoral canal, easily reducible; portion of lumen next mesentery patent (Littre's hernia); affected portion 10 feet from ilio-cæcal valve; no peritonitis.

### *Herniotomy, with Radical Cure.)*

Ice-bag followed by chloroform. Sac opened, stricture divided. Omentum ligatured and cut off, after separation of adhesions. Sac removed after ligature of its neck	23	C.	Sutures removed on 7th day. Wound healed by first intention. Light truss ordered.
Sac opened, stricture divided. Omentum ligatured and removed; sac treated in same way. Iodoform dressings	17	C.	Wound healed by first intention. No protrusion.
Chloroform. Sac opened, stricture divided. Omentum cut off after ligature. Gut reduced. Sac dissected free, neck ligatured, and fundus removed. No drainage-tube	21	C.	Omentum adherent to neck of sac. Gut congested. Wound healed by first intention. Truss ordered.
Sac opened, stricture divided. Small knuckle of gut returned, as well as surrounding omentum. Sac removed after ligature of its neck	20	C.	Same hernia operated upon many years ago. Confined in York Road Hospital 13 days before admission. Ice-bag and taxis had been tried there. Sutures removed on 9th day. Wound healed by first intention.
Sac opened, stricture divided, gut reduced. Omentum ligatured and removed after separation of adhesions. Sac ligatured at neck and fundus removed. Silver-wire sutures and iodoform dressings	42	C.	Large mass of omentum with varicose veins. Sutures removed on 8th day. Wound healed by first intention. Silk ligature sloughed out on 20th day.

I. (*Strangulated*

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
47	Married	F.	46		4 years	24 hours	?

J. (*Strangulated Umbilical*

48	Married	F.	53	—	Many years	48 hours	Entero-epiplocele
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K. (*Strangulated Umbilical Hernia.*

49	Married	F.	45	—	7 years	48 hours	Entero-epiplocele
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L. (*Strangulated Umbilical Hernia.*

50	Married	F.	48	—	2 years	4 days	Entero-epiplocele
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*Umbilical Hernia.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Chloroform administered preliminary to operation. After a few inhalations she vomited violently, and suddenly ceased to breathe. Artificial respiration without effect	1	D.	Very collapsed on admission. Large left femoral hernia also, apparently not strangulated. No P.M.

*Hernia. Herniotomy.)*

Sac opened by median incision; offensive odour. Large mass of omentum ligatured and cut off; two coils of strangulated gut, one gangrenous at point of stricture, the other coil doubtful; this one was reduced after division of stricture from within sac, but the gangrenous coil was drawn out, and a healthy portion sutured to the wound on each side. Skin sutured and large drainage-tube introduced	1	D.	Skin bluish and shining. General condition bad. Did not rally after operation, and died following day. No P.M.
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*Herniotomy, with Radical Cure.)*

Sac opened, stricture divided from within sac. Omental adhesions separated, and large mass ligatured and removed; coil of gut reduced. Part of sac dissected free and cut off; edges brought together with silk and catgut sutures; abdominal wound sutured. Cyanide dressings	49	C.	Abdomen tense, but general condition good. Intestine very dark. Offensive discharge from upper part of wound for several days. Almost healed on discharge. Abdominal belt.
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*Herniotomy and Resection of Intestine.)*

Sac opened by median incision. Large portions of omentum ligatured and removed. Whole of transverse colon in sac; strangulated extremities gangrenous, but not perforated. Healthy portion drawn out; clamps applied (Mr. Makins') at each end, and 24 inches of colon removed; ends sutured to wound. Dressed with iodoform and wood wool	1	D.	Walked into hospital. Tense umbilical hernia, size of foetal head; skin red and blistered from applications. Day after operation condition good. Large amount of fluid faeces from artificial anus. Suddenly died in evening without any previous bad symptoms. P.M.—2 inches of fat in abdominal wall; upper opening in colon 18 inches from caecum; portion of colon between caecum and artificial anus of large size, and showed 5 or 6 transverse, shallow ulcers, with hæmorrhagic borders; no peritonitis. Left lung studded with caseous patches; cavity at apex, and miliary tubercles also in upper lobe. Right lung caseous; nodules at apex.
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## HERNIA. NOT STRANGULATED.—

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
1	Nil	M.	2	R. and L.	Congenital	Reducible	? Enterocle
2	Nil	M.	$\frac{11}{12}$	R.	„	Irreducible	? „
3	Labourer	M.	24	R.	1 year	Reducible	? „
4	„	M.	23	L.	Old	„	? „
5	„	M.	18	R. and L.	3 years	„	? „
6	Nil	M.	$\frac{9}{12}$	L.	4 months	„	„
7	Coachman	M.	22	R.	2 years	„	? „
8	Railway porter	M.	45	R.	15 months	Irreducible	Epiplocele
9	Labourer	M.	50	L.	18 years	„	? „
10	Barman	M.	30	L.	Old	„	? „
11	Stonemason	M.	40	R.	$3\frac{1}{2}$ years	„	Enterocle
12	Nil	M.	$1\frac{7}{12}$	R.	1 day	„	? „
13	Fishmonger	M.	44	L.	4 months	„	? Epiplocele
14	Cook (single)	F.	27	R.	$6\frac{1}{2}$ years	Reducible	? Enterocle
15	Married	F.	20	L.	3 weeks	„	? „
16	„	F.	54	L.	25 years	„	? „
17	„	F.	46	R. and L.	3 months	„	? „
18	„	F.	21	L.	3 years	Irreducible	? Epiplocele
19	Labourer	M.	64	R.	—	„	Enterocle



*A. (Inguinal. No Operation.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Circumcision	44	R.	Tight phimosis. Operation for radical cure postponed on account of bronchitis. Contracted scarlet fever, and was transferred to Medical Ward. Readmitted for radical cure Dec. 7th, 1891.
Lot. Plumbi	2	R.	Previously circumcised. Hernia went back within a few hours of admission. Truss ordered.
Truss	3	R.	Bubonocoele.
„	7	R.	Bubonocoele. Small incompletely descended testicle.
Circumcision	29	R.	Radical cure, left side, 2 years ago. Now a recurrent hernia on that side, and an inguinal hernia on right. Very tight phimosis.
Truss	23	R.	General condition bad. Adenoids removed from pharynx.
Nil	43	U.	Left hospital without permission. Had previously refused operation, and then requested that it should be done.
Ice-bag; new truss	16	R.	Irreducible for 2 days. Last portion of omentum reduced on 10th day.
Truss	7	R.	Irreducible 3 weeks. Reduced spontaneously on 2nd day.
Nil	2	U.	Refused operation.
Ice-bag	4	R.	Irreducible 24 hours. Reduced spontaneously in a few hours. Subject of double hydrocele.
Nil	4	R.	Hernia reduced spontaneously before arrival in the ward. Tight phimosis. Refused operation.
Ice-bag; truss	6	R.	Irreducible several hours. To have radical cure later.
Truss	9	R.	Small hernia, easily controlled by truss.
„	17	R.	Small hernia.
Nil	2	U.	Refused operation.
Double truss	38	R.	Herniæ have appeared since nephrectomy for tuberculous kidney 4 months ago.
Nil	4	U.	Reduced under chloroform 1 month ago. Irreducible 14 days. Refused operation.
Ice-bag	3	D.	Feeble old man. Cyanosed lips. Bronchitis. Right scrotal hernia, size of fetal head. No symptoms. Gradually sank and died on 3rd day, after vomiting a large quantity of green offensive fluid. P.M.—Fæces in peritoneal cavity; no peritonitis; cæcum and ascending colon in right side of scrotum; upper part of sigmoid adherent at left internal abdominal ring; worm-eaten ulceration throughout large intestine, and 30 inches below ilio-cæcal valve all coats right round bowel sloughing for distance of $\frac{3}{4}$ inch; an irregular aperture was found in the floor of this ulcer.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
20	School	M.	12	L.	2 years	Reducible	(Congenital) epiplocele
21	Tailor	M.	17	R.	Congenital	„	Enterocoele
22	School	M.	7	R.	„	„	? „
23	Carman	M.	22	R.	8 years	„	? „
24	Clerk	M.	20	R.	3 weeks	„	(Congenital) enterocoele
25	Nil	M.	5	R.	6 months	„	(Congenital) ? enterocoele
26	School	M.	8	R.	Congenital	„	? Enterocoele (funicular)
27	Nil	M.	2	R.	„	„	Enterocoele (funicular)

*Radical Cure.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Sac opened, testicle exposed. Small tag of omentum ligatured and removed; upper part of sac removed; external ring closed with two sutures. Cyanide dressings	32	C.	Wound healed in 10 days, after slight suppuration.
Neck of sac dissected free and ligatured; upper part of sac removed, and cut edges of lower part united with catgut to form tunica vaginalis; testicle stitched to bottom of scrotum; pillars of ring approximated with silk suture. Oil-silk drain. Iodoform dressings	33	C.	Some suppuration of external wound on discharge. No protrusion. Testicle in upper part of scrotum. Ordered truss.
Sac exposed and divided horizontally just above testicle; upper part removed, after ligature of its neck; pillars of ring united with two Lembert's sutures	21	C.	Union by first intention. No protrusion.
Neck of sac defined and ligatured; upper part of sac removed; lower left to form tunica vaginalis; varicocele removed between two silk ligatures; pillars of ring united by single silk suture. No drainage-tube. Iodoform dressing	23	C.	Union by first intention. Some epididymitis followed operation. Truss.
Sac dissected free; neck ligatured and fundus removed, lower part being left; testicle sutured to bottom of scrotum; pillars of ring approximated with five silk sutures. Iodoform dressings	25	C.	Testicle situated just outside external ring. No orchitis followed operation. Wound healed by first intention. On discharge testicle at bottom of scrotum. Truss with horse-shoe pad.
Chloroform. Sac opened, and testicle studded with tubercles exposed; a few tubercles also on lower half of sac; neck of sac ligatured, and fundus removed together with testicle; pillars of ring united with two kangaroo tendons. No drainage-tube. Iodoform dressings	47	C.	Temp. 104° day after operation; vomited twice. Temp. between 101° and 103° for next 6 days. Wound opened up, but nothing discovered. Small mass felt in upper part left side of abdomen 3 days after operation, and a larger mass in hypogastrium 30 days later. Gradually improved, and left hospital quite well.
Swelling exposed, and found to be a hydrocele of the cord, communicating above by narrow opening with a second sac, empty, but communicating above with peritoneal cavity. Both sacs removed after ligature of neck. Iodoform dressings	26	C.	Small inguinal hernia on left side.
Sac opened, gut reduced; testicle shut off from sac by septum; sac divided just above testicle, dissected free, neck ligatured and cut off; pillars of ring approximated by three Lembert's sutures. No drainage-tube. Iodoform dressings	18	D.	Day after operation temp. rose to 101·8°, and remained high till death on 3rd day. Respirations rapid and shallow; moist sounds all over chest. Wound perfectly healthy and abdomen normal. P.M.—Broncho-pneumonia; abdominal cavity normal.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
28	Labourer	M.	29	R.	10 weeks	Reducible	Enterocoele
29	Compositor	M.	17	R.	1 year	„	Epiplocele
30	Labourer	M.	38	L.	4 months	„	Enteropiplocele
31	„	M.	30	R.	7 months	„	Enterocoele
32	Sailor	M.	18	L.	8 months	„	Epiplocele
33	Clerk	M.	23	L.	10 years	„	? Enterocoele
34	Glass-blower	M.	19	L.	16 years	„	Enterocoele
35	Labourer	M.	19	L.	2 years	„	„
36	Groom	M.	19	R.	1 month	„	„

Treatment.	No. of days in hospital.	Result.	Remarks.
Sac exposed, and contents reduced before opening it; neck ligatured and sac removed; pillars of ring approximated with four Lembert's sutures. No drainage-tube. Iodoform dressings	42	C.	Sutures removed on 8th day. Wound healed by first intention. Light truss.
Ether. Sac opened, hour-glass in form; upper part contained omentum, which was returned; lower empty; neck ligatured and part of sac removed; pillars of ring approximated with three catgut sutures. Drainage-tube. Iodoform and mercurial dressings	74	C.	Wound opened up under chloroform about 8 hours after operation for hæmorrhage, which was stopped; tube and sutures removed on 8th day. Slight suppuration. On discharge no protrusion.
Chloroform. Sac exposed, contents reduced; sac opened and large mass of adherent omentum ligatured in four portions and removed; sac dissected free, and removed after ligature of neck with chromic gut; pillars of ring united with three silk sutures. Drainage-tube, and iodoform dressings	51	C.	There is also a right scrotal hernia. Temp. for 5 days after operation 99° to 104°. Slight suppuration of wound and localised slough of scrotum. On discharge scar firm. No protrusion.
Tumour exposed, and found to be thick-walled, encysted hydrocele of the cord, with finger-like hernial sac reaching nearly down to it; hydrocele dissected out, and hernial sac cut off high up (? ligature of neck)	26	C.	Sutures removed on 9th day. Wound healed by first intention. Scar firm. No protrusion.
Sac dissected free; ligatured at neck and removed; five Lembert's sutures used to close ring and strengthen canal. Iodoform dressings	47	C.	Wound healed by first intention.
Chloroform and ether. Empty sac dissected free; neck ligatured and sac cut off; five Lembert's sutures to close ring and strengthen canal. Iodoform dressings	23	C.	Wound healed by first intention.
Sac opened, neck ligatured, and body cut off; pillars of ring united with three sutures. Drainage-tube	55	C.	Tube removed on 2nd day, sutures on 8th. Truss.
Sac ligatured at neck and removed; pillars of ring approximated by two sutures	35	C.	Wound healed by first intention. Light truss.
Sac dissected free and drawn into canal, and fixed there by catgut suture; external ring closed with kangaroo tendon passed through pillars and conjoined tendon (MacEwan's operation). No drainage-tube	37	C.	Some suppuration, with rise of temperature. Drainage-tube introduced. A good deal of matting in region of canal. No protrusion. Inguinal hernia on left side also.



No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
37	Nil	M.	18	L.	13 years	Reducible	Enterocoele
38	School	M.	11	R.	8 years	„	Epiplocele
39	Mason	M.	18	L.	2 days	„	„
40	Police constable	M.	21	R.	? Congenital	„	„
41	Railway porter	M.	21	R.	1 week	„	? Enterocoele
42	Carpenter	M.	19	L.	2 years	„	? „
43	Ostler	M.	25	R. and L.	1 year 1½ years	} „	? „
44	Carman	M.	19	R.	2 years	„	? „
45	Cabman	M.	22	L.	2 years	„	? „
46	Waterman	M.	21	R.	2 months	„	? „
47	Labourer	M.	42	R.	1 month	„	? „

Treatment.	No. of days in hospital.	Result.	Remarks.
Ether. Small sac dissected free and drawn up to form plug in inguinal canal by silk suture threaded through it. Cyanide dressings. No drainage-tube. Circumcision then performed	24	C.	Sutures removed on 9th day. Wound healed by first intention.
Sac opened; omentum returned; neck of sac ligatured and fundus removed; pillars sutured. No drainage-tube	49	C.	Sutures removed on 6th day. Wound healed by first intention. No truss.
Sac removed after ligature of its neck; pillars of ring united with Lembert's sutures. Iodoform dressings.	41	C.	Wound healed by first intention. Scar firm. No protrusion.
Empty sac opened, dissected free, neck tied, and fundus removed; pillars of ring approximated with three silk sutures. Drainage-tube used	36	C.	No communication between tunica vaginalis and hernial sac, though patient said to have had hernia since birth. Tube removed 2nd day, sutures on 6th. Healing by first intention.
Ether. No definite sac; ring large and canal patent; both closed with silk sutures, leaving space for cord only. No drainage-tube. Cyanide dressings	36	C.	Rejected for police. Sutures removed on 6th day. Healing by first intention. Firm scar. No protrusion.
Sac dissected free, and removed after ligature of neck; five Lembert's sutures to close ring and canal. Iodoform dressings	32	C.	Sutures removed on 7th day. Wound healed by first intention. Firm scar. No protrusion.
<i>Left side.</i> —Ether. Sac dissected free, contents reduced, neck ligatured and fundus removed; pillars united by Lembert's sutures. Iodoform dressings. No drainage-tube	85	C.	Alcoholic subject. Interval of 26 days between two operations. Both wounds healed by first intention. Scars firm. No protrusion.
<i>Right side.</i> —Same operation, except that sac was found empty			
Ether. Sac empty; dissected free; neck ligatured and fundus removed; pillars united with several Lembert's sutures. No drainage-tube. Iodoform dressings	40	C.	Primary union. Pneumonia of right base on 2nd day after operation. Left hospital cured on 30th day. Scar firm. No protrusion.
Empty sac dissected free, and removed after ligature of neck; pillars approximated with silk suture. Cyanide dressings. No drainage-tube	22	C.	Primary union. Sutures removed on 5th day. Scar firm. No protrusion. Light truss.
Encysted hydrocele of the cord dissected out; empty hernial sac dissected free, opened, and puckered up by means of catgut suture threaded through it, and drawn into inguinal canal to form plug; pillars of ring sutured with two kangaroo tendons. No drainage-tube	37	C.	Admitted for encysted hydrocele of the cord. Sutures removed on 7th day. Primary union. Small abscess formed beneath upper part of scar afterwards.
Testicle, cord, and hernial sac dissected free; sac opened and cut off after ligature of neck; cord ligatured high up and removed with testicle. No drainage-tube	95	C.	Admitted for syphilitic testicle. Slight suppuratation of wound and cellulitis of abdominal wall. Incisions. Quite healed on discharge. No protrusion.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
48	Greengrocer	M.	54	R.	1 year	Irreducible	Epiplocele
49	Bricklayer	M.	46	R.	12 years	„	Entero-epiplocele
50	Labourer	M.	59	R.	30 years	„	Epiplocele
51	Railway porter	M.	72	R.	6 years	„	„
52	Beerhouse keeper	M.	43	R.	7 years	„	Entero-epiplocele; incarcerated
53	Clerk	M.	28	R.	8 years	„	Epiplocele
54	Housemaid (single)	F.	18	R.	1½ years	Reducible	? Enterocoele

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag for 2 days, then radical cure. Sac opened; matted, adherent omentum ligatured and removed; sac dissected free, neck ligatured and fundus removed. Iodoform dressings	55	C.	Bronchitis much increased by anæsthetic. Wound suppurated, and was opened up under anæsthetic 22 days after operation, and granulations scraped, after which wound healed rapidly.
Ether. Sac opened; large mass of matted, adherent (as high as internal ring) omentum ligatured and removed; high up in canal small knuckle of gut surrounded by omentum; sac dissected free, neck ligatured and fundus removed; pillars united with three silk sutures. Drainage-tube and iodoform dressings	43	C.	Tube removed on 2nd day, sutures on 7th. On discharge scar firm. No protrusion.
Thick sac. Mass of adherent omentum ligatured in three portions and cut off; sac dissected free, neck ligatured, and fundus removed. Drainage-tube	25	C.	Tube removed following day. Primary union. Scar firm. No protrusion.
Ice-bag 2 days without effect. Sac opened, matted omentum ligatured and removed; neck of sac ligatured and fundus removed. No drainage-tube	23	C.	Two sutures taken out a few hours after operation for removal of some blood-clot. On discharge wound firm. No protrusion.
Ice-bag. Sac opened, stricture divided; large mass of omentum ligatured in segments and cut off; gut reduced; sac left <i>in situ</i> , but neck ligatured	5	D.	Incarcerated on admission. Symptoms of strangulation on 3rd day. Gradually sank after operation and died next day. P.M.—Small intestine dilated except lower 3 inches of ilium, which was collapsed, but no sign of strangulation; tag of omentum adherent close to internal ring; no peritonitis.
8 hours after admission sac opened, omentum ligatured and removed; sac dissected free, neck ligatured, and fundus, which was bifid, removed; pillars of ring sutured and varicocele excised between two ligatures. Iodoform dressings	2	D.	Night before admission partly reduced an old irreducible hernia; abdominal pain and vomiting since. No distension nor vomiting after operation; suddenly became cyanosed, vomited once, and died 2nd day. P.M.—Fibrous band springing from mesentery near cæcum, and attached to abdominal wall, 1 inch above and internal to right internal abdominal ring; great omentum adherent at same spot; beneath band were coils of black intestine, 52 inches altogether; lower end 3 inches from cæcum; constriction tight.
Empty sac dissected free, and removed after ligature of its neck; ext. ring and canal closed by five Lembert's sutures. No drainage-tube	32	C.	Sutures removed on 6th day. Primary union.

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
55	Servant (single)	F.	25	R.	1½ years	Reducible	? Enterocoele
56	Cook (single)	F.	33	R.	1 year	"	? "

*C. (Femoral.*

57	Stoker	M.	27	R. and L.	1 year	Reducible	? Epiplocele
58	Married	F.	54	R.	2 years	Irreducible	? "
59	"	F.	56	R.	9 years	"	? "
60	"	F.	54	R.	6 years	"	? "
61	Widow	F.	65	R.	3 months	"	? "
62	Married	F.	30	L.	20 years	"	? "
					10 years	"	Epiplocele

*D. (Femoral.*

63	Carman	M.	41	L.	6 days	Irreducible	Epiplocele
64	Widow	F.	44	R.	7 years	"	Hydrocele of sac
65	Married	F.	44	R.	4 weeks	"	"
66	Cook	F.	57	L.	3 years	Reducible	Enterocoele (recurrent)
67	Widow	F.	64	L.	8 years	Irreducible	Epiplocele
68	"	F.	50	R.	3 months	"	"
69	Married	F.	45	R.	5 years	"	



Treatment.	No. of days in hospital.	Result.	Remarks.
External ring small. Piece of tissue in canal (?) Sac ligatured and removed; canal and ring closed by series of Lembert's sutures. No drainage-tube. Iodoform dressings	38	C.	Sutures removed on 8th day. Primary union. No protrusion.
Thick-walled empty sac, opened, dissected free, neck ligatured, and fundus removed; pillars of ring united with two kangaroo tendons. Cyanide and mercurial dressings. No drainage-tube	34	C.	Small accumulation of serum under scar on 12th day. No pus. On discharge firm scar. No protrusion.

*No Operation.)*

Double truss	4	C.	Easily controlled by truss.
Nil	2	U.	Not fit subject for operation.
Lotio Plumbi	8	R.	Left hospital against advice.
Truss	11	R.	Reduced spontaneously after hot bath.
Nil	7	U.	Not fit case for operation.
Truss	24	R.	Reduced spontaneously.

*Radical Cure.)*

Sac opened, omentum ligatured, and cut off; sac dissected free, neck ligatured, and fundus removed	31	C.	No protrusion on discharge.
Chloroform. Sac opened; contents fluid; no connection with abdominal cavity; neck ligatured and fundus cut off	23	C.	Primary union.
Sac opened; contents fluid; no communication with abdominal cavity; sac removed after ligature of its neck	32	C.	Primary union.
Sac opened, gut reduced; neck dissected free and ligatured; major part of sac left <i>in situ</i> , owing to its great size and adhesions	83	C.	Operation 4½ years ago for radical cure on same side; sac was removed and neck ligatured. Hernia reappeared 3 years ago. Scar gave way 18 months ago and bowels escaped; they were wrapped in a towel, and she walked to infirmary, where they were replaced and wound left open, which gradually healed, leaving a sinus.
Sac opened, adherent omentum ligatured and removed, stump being still adherent high up in canal; sac removed after ligature of its neck	12	C.	Primary union.
Neck of sac and small tag of contained omentum included in same ligature and removed	12	C.	Primary union.
Ice-bag. Sac opened, adherent omentum ligatured and removed; sac dissected free, neck and included omentum ligatured and cut away	36	C.	Extensive omental adhesions to neck of sac. Primary union. Small hard mass felt in femoral canal. No protrusion.

**E. (*Umbilical.***

No.	Occupation.	Sex.	Age.	Side.	Duration of hernia.	Reducible or irreducible.	Nature of hernia.
70	Married	F.	38	—	Many years	Irreducible	? Epiplocele

**F. (*Ventral.***

71	Stoker	M.	51	—	6 months	Reducible	? Enterocele
72	Cab-driver	M.	62	—	6 weeks	Irreducible	? Epiplocele
73	Police-sergeant	M.	44	—	2 months	Reducible	? „
74	Married	F.	38	—	2 days	Irreducible	? Entero-epiplocele (recurrent)

**G. (*Ventral.***

75	Painter	M.	50	—	2 years	Irreducible	Enterocele
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**H. (*Umbilical.***

76	Married	F.	36	—	5 years	Irreducible	Epiplocele
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*No Operation.)*

Treatment.	No. of days in hospital.	Result.	Remarks.
Nil	1	R.	Admitted for pain.

*No Operation.)*

Abdominal belt	16	R.	Large hernia in mid-line, extending from umbilicus to ensiform. Separation of recti wide.
Nil	17	R.	Omental hernia just below and to right of umbilicus. Transferred to Medical Ward for bronchitis.
Truss, with large pad, and abdominal belt	17	R.	Also small umbilical hernia. Hernia size of egg, 2 inches above left internal abdominal ring.
Ice-bag; abdominal belt	5	R.	Hernia in mid-line, 3 inches below umbilicus. Scar over it, site of operation in 1887 for radical cure, when sac was removed and edges of recti sutured. On discharge small piece of adherent omentum still in sac.

*Radical Cure.)*

Sac opened; quantity of ascitic fluid escaped; small knuckle of healthy gut in neck of sac, reduced; sac dissected away, and neck closed with thick silk sutures inserted transversely. No drainage-tube	22	C.	Urine contains one half albumen. Died 3 months after leaving hospital from renal disease.
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*Radical Cure.)*

Ether. Vertical incision; sac opened; large mass of omentum ligatured and removed; sac dissected away, and neck closed with silkworm-gut sutures. Iodoform and wood-wool dressings	25	D.	Admitted for Potts' fracture, and was desirous of having hernia cured. Increasing abdominal pain and distension for 3 days after operation. Frequent vomiting. Gradually became more feeble. Wound opened up on 4th day, setting free a little blood-stained pus. Died on 4th day. P.M.—General peritonitis of upper half of the abdominal cavity; small quantity of pus; liver large and fatty.
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SPECIAL TABLE II.—*Erysipelas*

No.	Sex.	Age.	Disease for which admitted.	Ward in which it arose.	Duration in hospital before attack.	Probable cause of attack.	Month.
1	M.	10	Extroversion of bladder	Leopold	363 days	Plastic operation	January
2	F.	35	Disease of ilium ; sinuses of thigh	Elizabeth	83 days before 1st attack ; 127 before 2nd	? Irritation of dressings	January and March
3	M.	19	Compound fracture of radius and ulna	Leopold	42 days	Incisions for cellulitis around fracture	March
4	F.	73	Recurrent scirrhus of left breast and axillary glands	Elizabeth	22 days	Operation wound	April
5	F.	42	Scirrhus of left breast and axillary glands	"	18 days	Operation wound	April
6	F.	46	Carbuncle and cellulitis of back of neck	Anne	19 days	Incisions	May
7	F.	2	Tuberculous disease of knee, sinuses	Elizabeth	14 days	? Irritation of dressings	June
8	M.	24	Sinuses of shoulder after excision ; caries of humerus and scapula	Clayton	13 days	? Operation for removal of carious bone, and scraping of sinuses	July
9	M.	42	Gunshot wound of left calf	"	4 days	Wound	October

*(arising in hospital).*

Part where eruption appeared.	Interval between action of probable cause and appearance of eruption.	Duration of attack.	Result.	Remarks.
Hypogastrium	6 days	16 days 1st attack; 10 days 2nd attack	Cured	Eruption spread from wound up to nipples and down to toes. Highest temp. 104°. 2nd attack after interval of 8 days. Eruption reappeared at wound, and spread to nearly same extent as before. Highest temp. 105.4°. Eight plastic operations altogether were performed.
Sinuses in each attack	? ?	12 days; 7 days	,,	No cause could be assigned for erysipelas, exploration of sinuses having taken place two months previously. Eruption spread down to ankle and over hip in 1st attack. Highest temp. 105°, on appearance of rash. 2nd attack milder. Highest temp. 103°.
Forearm	41 days after incisions and 30 days after transfer to William	6 days	,,	Admitted 5 days after accident with abscess at site of original wound. Transferred for cellulitis of arm 18 days after admission. Developed erysipelas while in William. Highest temp. 104.6°. Eruption spread all over the limb.
Left axilla	20 days after operation	22 days	,,	Wound nearly healed. Rigor and temperature of 102° at onset. Rigor on 5th day, with temp. 102°. Highest temp. 102° (once only). Abscess of chest followed erysipelas.
Wound	12 days	5 days	Died	Suppuration and gaping at one end of wound. Temperature rose to 101° day after operation, and remained high; highest 105° on appearance of rash. Wound became dry. Complexion yellow. Cyanosis at times. Twitching of limbs. Signs of consolidation at base of right lung. P.M.—Secondary growths in lungs and liver. Organs decomposed. 1½ pints of fluid in right pleura.
Incisions in neck	9 days	17 days	Cured	Skin undermined for 4 inches all round carbuncle. Eruption spread over back, shoulders, and neck. Highest temp. 104°. Attack mild.
Foot	?	8 days	,,	Erysipelas started at edge of dressings and spread from foot to groin. Highest temp. 103.6°, on 2nd day of eruption.
Wound	4 days	24 days	,,	Temperature rose to 101° on day after operation, and to 103° on 2nd day. Eruption appeared on 4th day, temperature having fallen nearly to normal, and spread to elbow and mid-line of chest.
,,	,,	12 days	,,	Erysipelas lasted 10 days, and spread up to lower part of thigh and down to foot. Highest temp. 103.6°. Whole skin of leg became separated from deep fascia by layer of sloughy tissue. Many incisions made.



SPECIAL TABLE II.—*Erysipelas*

No.	Sex.	Age.	Disease for which admitted.	Ward in which it arose.	Duration in hospital before attack.	Probable cause of attack.	Month.
10	M.	34	Cystitis; supra-pubic cystotomy, and drainage of bladder	Edward	39 days	? Irritation of tube in bladder	October
11	F.	8	Morbus coxæ sinuses	Elizabeth	44 days	Scraping sinuses	„
12	F.	$\frac{2}{1\frac{1}{2}}$	Multiple abscesses	Victoria	6 days	Incision for abscess on left shoulder	November
13	F.	21	Lupus of nose	Elizabeth	49 days	? Scraping	„
14	F.	36	Suppurating glands in right axilla	„	8 days	Incision and scraping	December

*(arising in hospital)*—continued.

Part where eruption appeared.	Interval between action of probable cause and appearance of eruption.	Duration of attack.	Result.	Remarks.
Wound	33 days	14 days	Cured	Erysipelas spread over abdomen, back, and upper parts of thighs and buttocks. Rigor, with temp. 107°, two days before rash appeared. Cystitis very much improved by attack, urine becoming almost normal.
Sinuses	4 days	18 days	Died	Erysipelas spread over thigh and leg, slightly also on to abdomen. 10 days after appearance of eruption patient developed diphtheria, from which she died in 8 days. Tracheotomy was performed. No P.M.
Shoulder	„	2 days	„	Abscesses said to have followed a previous attack of erysipelas 1 month ago. Eruption spread over front of chest and left arm. Highest temp. 107·4°. Convulsions for 2 hours before death. P.M.—No bone nor joint disease. Organs healthy.
Nose in both attacks	11 days	4 days 1st attack ; 3 days 2nd attack	Cured	Eruption spread over whole face and then subsided, temperature remaining normal and sub-normal for 5 days, when it suddenly rose to 100·8, with reappearance of rash on nose, which again spread over face. Highest temp. 103·2° (1st attack), and 102·8° (2nd attack).
Axilla	2 days	13 days	„	Previously had sore finger and lump in arm-pit, also inflammation of breast and lymphangitis of chest. Eruption spread over nearly whole chest and down right arm to elbow. Highest temp. 104·2°.

## SPECIAL TABLE III.—PYÆMIA.

CLASS I.—*Admitted with the disease.*

*Cellulitis of face.*—Male, æt. 40. Paint maker. Swelling of left side of face noted two days; no injury. Blue line on gums, teeth loose, salivation. Inner surface of left cheek excoriated by the teeth. Whole of left side of face greatly swollen and indurated. No wound. General condition too bad to allow of incisions. Brandy administered. Gradually sank, and died in about 30 hours. Temperature subnormal throughout. P.M.—Several pyæmic abscesses in all stages in each lung, mostly on or near the surface. Right lower lobe solid. Cloudy swelling and enlargement of liver and kidneys. Spleen large and soft.

*Gangrene of scrotum.*—Male, æt. 45. Stableman. History of gonorrhœa, followed by painful red swelling of left testicle, which was tightly strapped by patient's own medical attendant. Strapping removed day before admission. On admission, whole scrotum red and swollen. Slough about  $1\frac{1}{2}$  inches in diameter on left side. Patch of redness in middle of right thigh, over line of saphena vein. An abscess opened here 6 days later, and a large one in the left spermatic cord on 11th day. A large abscess formed on dorsum of right foot, and was opened on 46th day. Tarso-metatarsal joint involved, and carious bone felt. Patient steadily lost ground from the first, and became delirious for 2 days before death, which took place 57 days after admission. Never had a definite rigor, but perspired freely. Highest temperature  $105\cdot2^{\circ}$ ; usually  $99^{\circ}$  to  $102^{\circ}$ . P.M.—Inner and posterior surface of right femur bare in lower third. Bases of all right metatarsal bones carious, and their articulations with cuboid and cuneiform bones disorganised. Pus in sole of foot. Left testicle normal. Hypostatic congestion of both lungs. No abscesses. Pleuræ normal. Old decolourised infarct in right kidney. Liver cirrhotic; spleen enlarged and firm.

CLASS II.—*Acute bone cases.*

*Subperiosteal abscess of tibia.*—(1) Male, æt. 16. Fell, striking right knee, 5 days before admission; pain in knee on following day, which has gradually increased. Shivering fits and headache 24 hours. On examination, acutely tender spot to inner side of tubercle of right tibia. Small quantity of fluid in knee-joint. Temp.  $103^{\circ}$ . On following day an incision was made over the tender spot, opening a very small subperiosteal abscess. Head of tibia trephined, but nothing abnormal found. Temp.  $101^{\circ}$  to  $104^{\circ}$ . Delirious. Redness and swelling of knuckle of 3rd right finger appeared on 2nd day, and commencing abscesses of abdominal wall and right shoulder, with thickening of lower end of left

ulna, appeared on 3rd day. Constant vomiting. Evacuations passed into the bed. Temp.  $102^{\circ}$  to  $105^{\circ}$ . Rigor. Cold sponging. Pleural friction on right side. Died on 5th day, when temperature rose from  $102^{\circ}$  to  $108^{\circ}$ , just before death. P.M.—Subcutaneous abscesses in various parts of the body; one large one on left side of chest communicated with outer surface of pleura through the chest wall. Osteomyelitis of right tibia. Pus in medullary cavity. Purulent fluid in right knee-joint, but no communication traced with the medullary cavity. Both pleuræ covered with lymph. Hypostatic congestion of lungs. A little clear fluid in pericardium. Small patch of lymph near apex of heart. Abdominal organs congested. Brain normal.

(2) Male, æt. 10. Admitted to Medical Ward. No history of injury. Pains in all joints 2 days; no apparent cause. Day after admission tenderness and slight swelling noted over inner head of right tibia. Temp.  $103^{\circ}$ . Delirious, with lucid intervals. Incision down to bone, exposing small area of bare tibia, beneath expansion of Sartorius muscle. A few drops only of sero-pus beneath periosteum; joint apparently free. Next day noisy delirium. Temp.  $101^{\circ}$  to  $103^{\circ}$ . On 2nd day a pustular rash appeared over the chest and abdomen, and a commencing abscess on the back of the right forearm. Pericardial friction. Rapid respiration. Cyanosis. Muttering delirium. Gradually sank. Temp.  $102^{\circ}$  to  $104^{\circ}$ . No post mortem.

*Acute necrosis of tibia*.—Male, æt. 15. Delicate boy; always slight cough. No family history of consumption. Nine days before admission struck his left leg against a ladder; next day he had pain in the leg, shivering, and headache. First noted swelling 5 days after the accident. On admission, temp.  $101.8^{\circ}$ . Sordes on lips. Rapid respiration. Fluctuation over lower half of subcutaneous surface of left tibia. General redness and swelling of the whole leg. Enlarged glands in the groin; a little effusion into the ankle-joint. Incision 4 inches long made over tibia, and about 2 ounces of pus evacuated from beneath periosteum, lower 6 inches of inner and posterior surfaces of the bone being bare. Temperature fell to normal after operation. Five days later an abscess was discovered just below tubercle of tibia; incised, and bare bone found. Temp.  $104^{\circ}$ . Signs of consolidation of base of left lung. Abscess opened over front of left ankle-joint on 19th day, and right hip-joint opened for abscess on 47th day; neck of femur bare. Left knee-joint red and swollen. Fluid in joint; profuse discharge from incisions in leg. Amputation of left thigh in lower third on 119th day. Amputation flaps sloughed and bone projected. Gradually sank, and died on 160th day after admission. P.M.—Small quantity of pus in right knee-joint. Cartilages ulcerated. Right hip-joint full of pus. Head of femur extensively carious, and lying on dorsum of ilium. All cartilage disappeared. Acetabulum carious. No other abscesses.

*Acute necrosis of fibula*.—Male, æt. 2. Fell, striking left knee, 2 days before admission; whole limb became very swollen next day. On admission, healthy-looking child. Temperature normal, but pulse rapid. Foul sore over left external malleolus, the result of a blister; two blisters over inner ankle. Whole left limb red and œdematous. Glands in groin enlarged. Slight excess of fluid in knee-joint. Incision over shaft of tibia down to bone, which was found to be normal. Next day temp.  $101.4^{\circ}$  and vomiting. Fluctuation over left external

malleolus. Incision setting free about one ounce of pus. Malleolus bare, and soft parts separated from front of ankle-joint, which was not involved. Counter incision in front of ankle and drainage-tube inserted. Child died early on 2nd day after admission. P.M.—Epiphyses of lower ends of tibia, and fibula normal. External malleolus bare. Pyæmic infarcts in each lung, some in quite an early stage, others purulent. Lymph on surface, corresponding to infarcts. A few early infarcts in kidneys. Liver and spleen normal. Slight excess of fluid in right knee-joint. No pus.

*Acute necrosis of femur.*—Female, æt. 12. Previously healthy child. Four days before admission fell, striking left knee against foot-board of train. Pain in knee since, preventing her from putting her foot to the ground. Has not slept for three nights, owing to acute pain. Frequent shivering fits. On admission, flushed cheeks, sordes on lips, and temp.  $101\cdot8^{\circ}$ . Swelling over lower end of left femur, which is acutely tender. No redness of skin nor fluctuation. Slight excess of fluid in knee-joint. A few hours after admission an incision was made in front of, and parallel to, tendon of adductor magnus. Periosteum found separated from popliteal surface of femur by about two ounces of pus. Drainage-tube introduced. During next three days child gradually sank, nearly always wandering, day and night. Temperature varied between  $100^{\circ}$  and  $103\cdot8^{\circ}$ ; immediately before death it rose to  $106^{\circ}$ . No distinct rigors. Discharge from wound sanious and scanty. Died on 3rd day. P.M.—Periosteum separated from lower half of posterior and inner surfaces of left femur. Epiphysis normal. Medulla just above lower extremity (?) too red and soft. Some pus in knee-joint. Lymph on both surfaces of pericardium, and a little near root of each lung. Lungs normal. Abscess of wall of right ventricle. Multiple small pale abscesses in cortex of both kidneys, surrounded by a vascular zone. Two or three small early abscesses in spleen. Liver soft, small white fibrous patches on surface.



SPECIAL TABLE IV.

SPECIAL TABLE IV.—*Fractures and Dislocations treated*

BONE.	Sex.		Age.									
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Not stated.	
DISLOCATIONS.												
<i>Lower Jaw—</i>												
(a) Bilateral . . . .	3	1	...	...	...	2	...	...	...	1	...	
(b) Unilateral . . . .	...	1	...	...	...	1	...	...	...	...	...	
<i>Scapula</i> . . . . .	2	..	...	...	...	1	1	...	...	...	...	
<i>Clavicle</i> . . . . .	1	...	...	...	...	...	1	...	...	...	...	
<i>Humerus—</i>												
(a) Subcoracoid . . . .	23	13	...	...	1	6	8	4	11	5	1	
(b) Subglenoid . . . .	3	3	...	...	...	...	...	3	1	2	...	
(c) Subspinous . . . .	1	...	...	...	...	...	...	...	1	...	...	
<i>Radius and ulna—</i>												
(a) Backwards . . . .	14	2	...	3	8	1	...	2	1	...	1	
(b) Outwards . . . .	3	...	...	1	1	...	1	...	...	...	...	
<i>Radius</i> . . . . .	1	...	...	1	...	...	...	...	...	...	...	
<i>Ulna</i> . . . . .	...	1	...	...	1	...	...	...	...	...	...	
<i>Carpus</i> . . . . .	2	1	...	...	2	...	...	...	1	...	...	
<i>Thumb—</i>												
(a) Distal phalanx. . . .	2	1	...	...	...	2	...	...	1	...	...	
(b) Proximal phalanx . . .	5	...	...	1	2	...	...	2	...	...	...	
(c) Metacarpal . . . .	3	...	...	...	...	...	3	...	...	...	...	
<i>Phalanges—</i>												
(a) Distal . . . . .	5	...	...	...	3	2	...	...	...	...	...	
(b) Middle . . . . .	5	3	1	...	...	2	3	1	1	...	...	
(c) Proximal . . . . .	3	3	...	...	3	1	...	1	1	...	...	
FRACTURES.												
<i>Inferior Maxilla</i> . . . .	9	2	...	...	1	5	4	1	...	...	...	
<i>Nasal</i> . . . . .	3	7	...	...	...	3	5	1	..	1	...	
<i>Scapula</i> . . . . .	3	...	...	...	1	1	...	1	...	...	...	
<i>Clavicle</i> . . . . .	66	40	29	25	11	12	13	9	5	2	...	
<i>Ribs</i> . . . . .	91	39	...	...	3	11	42	27	32	12	3	

*in Casualty Department, not admitted to Wards.*

Side of body.			Remarks.
R.	L.	Not stated.	
...	...	1	3 by yawning, 1 during coughing.
1	...	...	Yawning.
...	2	...	Acromion beneath outer end of clavicle. Direct violence.
1	...	...	Sternal end forwards. Fall while intoxicated.
15	21	...	9 by direct violence, 17 indirect; 1 muscular action (throwing cricket ball); 9 not stated. Chloroform used in 6 cases.
4	1	...	3 by direct violence, 3 indirect. All reduced without chloroform.
1	...	...	Indirect violence.
7	9	...	11 by indirect violence, 2 direct; 1 not stated; fracture of internal epicondyle in 2 cases. Chloroform used in 2 cases.
...	3	...	1 by direct violence, 2 indirect.
...	1	...	Head of bone forwards.
...	1	...	Backwards and outwards.
1	2	...	Backwards in each case. Direct violence.
2	1	...	2 compound.
4	1	...	4 by indirect violence, 1 direct; 3 backward dislocations.
2	1	...	2 by indirect violence, 1 direct.
4	1	...	2 compound.
3	5	...	3 compound.
3	3	...	
5	6	...	9 horizontal portion; 1 vertical portion; 1 neck.
9	10	...	1 compound.
1	2	...	2 of spine; 1 of body; direct violence in all.
47	59	...	Inner $\frac{1}{3}$ rd 2; middle $\frac{1}{3}$ rd 12; outer $\frac{1}{3}$ rd 58; acromial end 9; "greenstick" 12; remainder not stated.
66	64	...	2nd rib 1; 3rd 3; 4th 7; 5th 8; 6th 10; 7th 30; 8th 42; 9th 41; 10th 31; 11th 8; 12th 3; 11 not stated.

SPECIAL TABLE IV.—*Fractures and Dislocations treated in*

BONE.	Sex.		Age.									Not stated.
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60		
FRACTURES—continued.												
<i>Humerus—</i>												
(a) Anatomical neck . . .	1	...	...	...	...	...	...	...	1	...	...	
(b) Surgical neck . . .	4	8	...	...	...	...	...	4	3	5	...	
(c) Shaft . . .	16	6	3	4	5	1	3	2	1	2	1	
(d) Lower extremity . . .	14	8	4	7	10	...	...	...	1	...	...	
(e) Separation of epiphysis . . .	2	5	2	5	...	...	...	...	...	...	...	
<i>Radius and ulna—</i>												
(a) Fracture . . .	41	8	10	14	16	...	4	2	1	2	...	
(b) Separation of epiphysis . . .	1	...	1	...	...	...	...	...	...	...	...	
<i>Radius—</i>												
(a) Fracture . . .	37	24	21	14	8	4	5	5	3	1	...	
(b) Colles' fracture . . .	17	46	...	...	2	3	4	15	25	14	...	
(c) Separation of epiphysis . . .	4	2	...	2	4	...	...	...	...	...	...	
<i>Ulna—</i>												
(a) Fracture . . .	13	11	3	3	3	4	4	1	3	3	...	
(b) Olecranon (fracture) . . .	10	1	...	...	2	3	1	3	2	...	...	
(c) Separation of epiphysis . . .	1	...	1	...	...	...	...	...	...	...	...	
<i>Metacarpus</i> . . . . .	29	8	1	1	4	10	9	9	3	1	...	
<i>Phalanges</i> . . . . .	27	10	1	2	6	9	8	6	3	2	...	
<i>Tibia</i> . . . . .	8	2	5	...	2	1	1	1	...	...	...	
<i>Fibula</i> . . . . .	24	6	...	...	4	8	10	4	4	...	...	
<i>Metatarsus</i> . . . . .	7	1	1	...	1	2	3	...	...	1	...	
<i>Phalanges</i> . . . . .	11	1	...	...	3	5	1	3	...	...	...	

*Casualty Department, not admitted to Wards—continued.*

Side of body.			Remarks.
R.	L.	Not stated.	
...	1	...	
5	7	...	
10	12	...	Middle $\frac{1}{3}$ rd 13; upper $\frac{1}{3}$ rd 2; lower $\frac{1}{3}$ rd 7; muscular action 1 ease (throwing cricket ball).
9	13	...	T-shaped into joint 6; external condyle 6; internal condyle 9; internal epicondyle 1.
2	5	...	Upper 4; lower 3.
23	26	...	Upper $\frac{1}{3}$ rd of bones 8; middle 12; lower 13; "greenstick" 12; compound 1.
1	...	...	Lower epiphysis 1.
28	33	...	Upper $\frac{1}{3}$ rd 11; middle 14; lower 18; "greenstick" 13.
28	35	...	Impacted 3.
2	4	...	Upper 2; lower 4.
11	13	...	Upper $\frac{1}{3}$ rd 11; middle 5; lower 10; "greenstick" 2.
3	8	...	
...	1	...	Lower epiphysis 1.
26	11	...	1st metacarpal 13; 2nd 5; 3rd 7; 4th 8; 5th 2; compound 3.
18	19	...	Thumb 10; index 6; middle 7; ring 5; little 7; not stated 2; compound 13.
6	4	...	Middle of shaft 1; lower $\frac{1}{3}$ rd 2; internal malleolus 2; "greenstick" 2; splintered 1; not stated 1; separation of upper epiphysis 1.
12	18	...	Lower $\frac{1}{3}$ rd 21; upper $\frac{1}{3}$ rd 2; external malleolus 6; not stated 1.
5	3	...	1st metatarsal 3; 2nd 1; 3rd 2; 4th 1; 5th 3; compound 1.
5	7	...	Great toe 8; 2nd 2; 4th 1; not stated 1; compound 1.





# REPORT OF

## THE MIDWIFERY DEPARTMENT

### FOR 1891.

BY ROBERT CORY, M.A., M.D., F.R.C.P.

THE RESIDENT ACCOUCHEURS FOR THE YEAR WERE MESSRS. W. R. CARTER,  
T. H. HARPER, W. G. STOKES, AND W. F. UMNEY.

FROM the 1st of January, 1891, to the 31st of December, 1891 (both dates inclusive), 2249 women were attended. Of these, 2225 resulted in single births and 24 in multiple births. There were 15 cases of abortion among the single births.

In the following table the presentations of the children are classified :

	Among the single births.	Among the twin births.	Total.
Vertex . . . . .	2145	33	2178
Breech . . . . .	36	8	44
Superior extremities, including the shoulder . . . . .	6	2	8
Head and hand . . . . .	1	2	3
Inferior extremities . . . . .	17	4	21
Head and foot . . . . .	1	1	2
Face . . . . .	4	0	4
Abortions . . . . .	15	0	15
	<u>2225</u>	<u>50</u>	<u>2275</u>

Of the 2249 cases attended,

364 were 1st confinements.				64 were 10th confinements.			
333	„	2nd	„	47	„	11th	„
291	„	3rd	„	21	„	12th	„
289	„	4th	„	11	„	13th	„
225	„	5th	„	6	„	14th	„
208	„	6th	„	1	„	15th	„
157	„	7th	„	2	„	16th	„
124	„	8th	„	1	„	18th	„
103	„	9th	„				
				2249			

The following table gives the number of women confined at each successive year of life; the youngest mother being 17, and the oldest 47 years of age :

At the age of	No. of women confined.	At the age of	No. of women confined.
17	...	33	...
18	...	34	...
19	...	35	...
20	...	36	...
21	...	37	...
22	...	38	...
23	...	39	...
24	...	40	...
25	...	41	...
26	...	42	...
27	...	43	...
28	...	44	...
29	...	45	...
30	...	46	...
31	...	47	...
32	...		...
			2249

The FORCEPS were used in 39 cases. The reasons given for their use may be tabulated as follows :

Delay during 1st stage of labour . . .	13	{	5 contracted pelves.
			6 inertia.
			1 premature labour.
			1 placenta prævia.
Delay during 2nd stage of labour . . .	26	{	22 tedious.
			1 face.
			1 large head.
			2 not stated.

There were 13 cases of primiparæ among the 39 forceps cases, and 2 cases of rupture of the perinæum are reported, 1 only being a primipara.

#### PLACENTA PRÆVIA.

Three cases of placenta prævia are reported as having occurred during the year.

No.	Age of mother.	Confinement.	Sex of child.	Treatment.	Result to mother.	Result to child.	Placental position.
7764	34	6th	M.	Version	Recovery	Stillborn	Not stated
92	25	4th	F.	"	"	"	"
1532	42	8th	F.	"	"	"	"

#### CASES OF VERSION.

Podalic version was resorted to in 9 cases: 3 for presentation of shoulder, 1 for contracted pelvis, 1 for head and foot presentation, 1 for elbow, and 3 for placenta prævia; 8 of the children were stillborn.

The BREECH presented in 36 cases among the single births, which gives a proportion of 1 in every 61·8; 12 of the children were stillborn, which is equivalent to a death-rate of 33·3 per cent.

Four maternal deaths are recorded during the year.

No.	Age.	Confinement.	Sex of child.	Result to child.	Interval between birth of child and death of mother.	Cause.
7515	30	3rd	M.	Living	8 days	Consumption
905	31	6th	M.	Stillborn	40 minutes	Hæmorrhage
1090	22	2nd	F.	„	66 hours	Sudden death
1201	30	6th	F.	Living	7 days	Acute bronchitis, of which she suffered before confinement

A death-rate of ·18 per cent.

OF THE CHILDREN.—The number of children born among the 2249 women attended during the year was 2275, there being 22 cases of twins and 2 cases of triplets. The sexes of 2223 of them were 1122 males and 1101 females. The sex of 52 is not stated.

There were 98 stillbirths, or 1 in 22·9 labours, or 4·3 per cent.

The characters of the labours in which the stillbirths occurred are given below.

Natural labours, including cases of intra-uterine maceration . . . . .	35
Abortions . . . . .	15
Premature . . . . .	11
Breech . . . . .	12
Funis presentations . . . . .	2
Forceps . . . . .	5
Footlings . . . . .	5
Placenta prævia . . . . .	3
Versions . . . . .	8
Occipito-posterior . . . . .	1
Face . . . . .	1
	<hr/>
	98



The following table gives particulars of the cases of multiple births:

No.	Age of mother.	No. of confinement.	Date of birth.	Sex.			Result to mother.	Result to children.			Presentations.		
				1st.	2nd.	3rd.		1st.	2nd.	3rd.	1st child.	2nd child.	3rd child.
6821	30	5	Jan. 13	M.	F.	M.	L.	L.	L.	L.	Vertex	Breech	Vertex
7068	28	4	Feb. 10	M.	M.	...	L.	L.	S.	...	"	Vertex	
7072	34	9	March 3	M.	M.	...	L.	L.	S.	...	"	Shoulder	
7094	33	2	Jan. 5	M.	F.	...	L.	L.	L.	...	"	Vertex	
7266	30	5	March 3	F.	F.	...	L.	L.	L.	...	"	Feet	
7859	36	8	May 3	M.	F.	...	L.	L.	L.	...	"	Vertex	
7571	21	1	March 22	F.	F.	...	L.	L.	L.	...	"	"	
7573	31	11	Feb. 20	F.	F.	...	L.	S.	L.	...	Breech	"	
7610	30	3	May 7	M.	F.	...	L.	L.	L.	...	Vertex	Feet	
7730	19	1	May 3	F.	F.	...	L.	L.	L.	...	"	"	
7835	31	5	June 11	M.	M.	...	L.	L.	L.	...	"	Armand hand	
7905	34	7	July 20	F.	F.	...	L.	L.	L.	...	"	Vertex	
164	29	4	Aug. 8	F.	F.	...	L.	L.	L.	...	"	"	
168	32	7	July 4	M.	F.	...	L.	L.	L.	...	Breech	Breech	
269	23	3	July 6	F.	F.	...	L.	L.	L.	...	Vertex	Vertex	
514	23	1	Oct. 6	M.	M.	...	L.	L.	S.	...	"	Feet	
663	23	1	Aug. 12	F.	F.	...	L.	L.	L.	...	"	Vertex	
675	27	7	Aug. 17	F.	F.	...	L.	S.	L.	...	"	"	
677	40	8	Aug. 10	M.	F.	...	L.	L.	L.	...	"	"	
687	25	4	Aug. 1	M.	M.	...	L.	S.	S.	...	Breech	Breech	
740	39	13	Nov. 14	M.	F.	...	L.	L.	S.	...	"	"	
1366	35	8	Dec. 14	F.	F.	F.	L.	L.	L.	L.	Vertex	Hand and foot	Foot and vertex
1490	33	6	Dec. 21	M.	F.	...	L.	L.	L.	...	Breech	Vertex	
1593	35	7	Dec. 20	F.	F.	...	L.	L.	L.	...	Vertex	Shoulder	



# REPORT

## OF THE

### IN-PATIENT DEPARTMENT FOR DISEASES OF WOMEN

FOR THE YEAR 1891.

BY CHARLES J. CULLINGWORTH, M.D., F.R.C.P.

IN the preparation of the following report I have gratefully to acknowledge the assistance I have received from Dr. W. F. Umney, who kindly undertook the compilation of Tables I and II. These tables comprise the general statement of patients and general table of diseases. For the tables of operations and of the causes of death in fatal cases, as well as for the two special tables dealing with the abdominal operations, and for the remarks which follow them, I am, as on previous occasions, personally responsible.

TABLE I.

#### *General Statement of Patients in Adelaide Ward.*

Number of Beds in Ward (including small Ward)	...	...	...	21
Number of Patients in Ward, Jan. 1st, 1891	...	...	...	12
" " " Dec. 31st, 1891	...	...	...	10
" " discharged or who died during 1891:				
Cured	...	...	...	114
Relieved	...	...	...	75
Unrelieved or other causes	...	...	...	29
Died	...	...	...	7
Total	...	...	...	225
			Rate per cent.	
			50·44	
			33·18	
			12·83	
			3·54	
			99·99	

Average number of days of each patient's stay in hospital—24·56.

TABLE II.—General Table of Diseases.

DISEASE.	Number of cases.	Age.					Duration of residence.					REMARKS.					
		10-20	30-40	50-60	Above 60	Under 1 wk.	1-2 weeks	2-4 weeks	1-2 months	Above 2 mos.	Cured.				Relieved.	Unrelieved.	Died.
<b>I. DISEASES OF OVARY.</b>																	
<i>Cysts.</i>																	
a. Simple and multiple	13	3	3	6	1	2	1	2	8	10	1	1	...	2	The case "relieved" refused operation; the others all underwent operation. One fatal case due to secondary hæmorrhage owing to ligature of pedicle slipping; the other due to shock owing to enormous size of tumour.		
b. Suppurating	9	1	3	4	1	...	...	...	1	5	3	8	...	1	All underwent abdominal section. Fatal case never rallied from operation; obstruction of small intestine by adhesion. Both carcinomatous.		
c. Malignant	2	...	2	...	...	...	...	...	2	...	2	...	...	...			
Carcinoma	2	1	...	...	1	...	...	...	1	1	1	...	1	1	Death in fatal case occurred 6 weeks after operation from extension of growth in pelvis.		
Infective papilloma	1	...	1	...	...	...	...	...	...	1	1	...	1	1	Growth not removed; large quantity of ascitic fluid removed.		
Prolapse	1	...	1	...	...	...	1	...	...	...	1	...	...	...			
<b>II. DISEASES OF FALLOPIAN TUBES.</b>																	
Hæmatosalpinx	5	3	2	...	...	...	...	...	1	4	...	4	1	...	The unrelieved case refused operation; the others underwent abdominal section. Two probably cases of tubal gestation. No operation suggested; condition remained the same.		
Hydrosalpinx	1	...	1	...	...	...	...	...	1	...	...	...	1	...	Unrelieved case went out at own request; other cases treated with rest.		
Salpingitis	10	6	4	...	...	...	4	6	...	...	1	8	1	...	Abdominal section in all cases. Two cases septic in origin; others probably gonorrhæal. In one case fecal fistula resulted from rent in bowel.		
Pyosalpinx	12	6	5	1	...	...	...	...	11	1	12	...	...	...	Gonorrhæal origin; abdominal section.		
Tubo-ovarian cyst (suppurating)	1	...	1	...	...	...	...	...	...	...	1	1	...	...			

[illegible]



TABLE II—continued.

DISEASE.	Number of cases.	Age.						Duration of residence.					REMARKS.			
		10-20	-30	-40	-50	-60	Above 60	Under 1 wk.	1-2 weeks	2-4 weeks	1-2 months	Above 2 mos.	Cured.	Relieved.	Unrelieved.	Died.
IV. DISEASES OF UTERUS AND CERVIX—continued.																
Carcinoma of cervix .	11	...	6	4	...	1	4	2	2	2	1	...	3	7	1	The relieved cases were treated—One by vaginal hysterectomy ; one by supra-vaginal amputation of cervix; in one the cervix was congenitally hypertrophied, so that infra-vaginal amputation sufficed. Of the unrelieved cases—Six were too far advanced for operation, and the others refused operation. In the case that died, vaginal hysterectomy was performed, patient dying of shock.
Latero-version .	1	1	...	...	...	...	...	1	...	...	...	...	1	...	...	From old pelvic peritonitis.
Anteflexion .	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	Dilatation with metallic bougies.
Retroflexion .	2	...	1	1	...	...	...	1	1	...	...	1	1	...	...	In one case relieved only, as uterus was bound down by adhesions; in other case it was replaced, and Hodge's pessary inserted.
Prolapse .	2	...	1	1	...	...	1	1	1	...	...	...	1	1	...	Cup and stem pessary used in one case; the other case developed delirium tremens, and refused operation.
Recurrence of malignant growth	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	Supra-vaginal amputation of cervix had been performed outside for carcinoma. Came up merely for opinion as to recurrence. No signs of it.
V. DISEASES OF VAGINA, VULVA, &c.																
Vesico-vaginal fistula .	1	...	1	...	...	...	...	...	...	...	1	1	...	...	...	The result of labour. Cured by third operation.
Atresia vaginæ .	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	The result of cicatricial adhesions after labour. Hæmatokolpos and hæmatometra. Septum divided and retained menstrual fluid allowed to drain gradually away.
Ulceration (simple) .	1	...	...	...	...	1	...	1	...	...	...	...	1	...	...	Caused by pessary, which had not been removed for 14 years.
Syphilitic ulceration of vagina	1	...	...	1	...	1	...	1	...	...	...	...	1	...	...	Iodide of potassium produced acne rash.

[illegible]

TABLE II—continued.

DISEASE.	Number of cases.	Age.					Duration of residence.					REMARKS.		
		10-20	30-40	50-60	Above 60		Under 1 wk.	1-2 weeks	2-4 weeks	1-2 months	Above 2 mos.			
VII. VARIOUS.														
Menorrhagia . . .	5	2	2	1	...	...	1	3	1	...	3	2	One case curetted; one case in twice.	
Metrorrhagia . . .	1	1	...	...	...	...	...	1	...	...	1	...	The relieved case was in twice.	
Dysmenorrhœa . . .	4	1	3	...	...	...	1	1	1	...	1	1	2	
Pelvic neuralgia . . .	5	3	2	...	...	...	2	2	1	...	...	3	2	
Melancholia . . .	1	...	1	...	...	...	1	...	...	...	...	...	1	
Hysteria . . .	5	...	3	2	...	...	2	3	...	...	1	1	3	1 case had incontinence of urine; 1 transferred to Christian Ward.
Pruritus vulvæ . . .	1	...	...	1	...	...	...	1	...	...	...	1	...	Neurotic.
Vaginismus . . .	1	1	1	...	...	...	...	1	...	...	...	1	...	Slight vaginitis; chiefly neurotic.
Cystitis . . .	1	1	1	...	...	...	...	...	1	...	...	1	...	Followed acute distension of bladder; urine not drawn off till 5th day after delivery.
Tubercular peritonitis . . .	3	1	2	...	...	...	1	1	1	...	...	1	2	One case transferred to Medical Ward; in one exploratory laparotomy.
Enteritis . . .	1	1	1	...	...	...	1	...	...	...	1	...	...	History of retained placenta; ? septic diarrhœa.
Perityphlitis . . .	1	...	1	...	...	...	...	...	...	1	1	...	...	Appendix perforated. Abdominal section finished by resident assistant surgeon.
Intestinal obstruction . . .	2	1	1	1	...	...	1	...	1	...	...	...	...	2 One case due to sarcomatous disease in pelvis; ovary had been removed for ? fibroma in July, 1890; artificial anus made by Mr. Pitts. The other case was transferred to Elizabeth Ward, and died before operation.
Carcinoma of sigmoid flexure . . .	1	...	1	...	...	...	1	...	1	...	...	1	...	Recurrence of growth 16 months after vaginal hysterectomy.
Pelvic abscess . . .	1	...	1	...	...	...	...	1	...	...	...	1	...	
Secondary syphilis . . .	1	1	...	...	...	...	...	1	...	...	...	1	...	Transferred to Medical Wards.
Influenza . . .	2	2	...	...	...	...	2	...	...	...	...	1	1	Gradually disappeared with rest. ? In abdominal wall.
Abdominal tumour . . .	1	1	...	...	...	...	...	...	1	...	...	1	...	Due to flatulent distension.
Phanton tumour . . .	1	...	1	...	...	...	...	1	...	...	...	...	1	

TABLE III.—Operations performed during the Year.

## Abdominal section:

Cystic adenoma of ovary . . . . .	8
"    "    " (suppurating) . . . . .	4
Carcinoma of ovary (cystic) . . . . .	2
"    "    " (solid) . . . . .	1
Papillomatous cyst of ovary . . . . .	2
"    "    " (suppurating) . . . . .	1
Suppurating dermoid cyst of ovary . . . . .	1
Parovarian cyst . . . . .	1
Suppurating retro-peritoneal cyst . . . . .	1
Cæsarian section . . . . .	1
Abscess of ovary . . . . .	3
Suppurating tubo-ovarian cyst . . . . .	1
Chronic salpingitis . . . . .	1
Purulent salpingitis . . . . .	12
Hæmato-salpinx . . . . .	4
Ovarian blood cyst with chronic salpingitis . . . . .	1
Oöphorectomy for uterine fibroids . . . . .	2
Perforation of vermiform appendix . . . . .	1
Tubal gestation . . . . .	1
Tubercle of appendages and peritoneum . . . . .	3
Pelvic abscess . . . . .	2
Exploratory incisions—	
Papilloma of ovary . . . . .	1
Ascites and subperitoneal fibroid . . . . .	1
Tubercular peritonitis . . . . .	1
Hydramnion . . . . .	1 = 4
	—57
Vesico-vaginal fistula . . . . .	2
Fibroid polypus of uterus . . . . .	7
Acute inversion of uterus . . . . .	1
Supra-vaginal amputation of cervix uteri . . . . .	2
Infra-vaginal amputation of cervix uteri . . . . .	1
Artificial anus (Mr. Pitts) . . . . .	1
Vaginal hysterectomy . . . . .	2
Atresia vaginæ . . . . .	1
Anterior and posterior colporrhaphy . . . . .	1
	—
Total number of operations . . . . .	74

TABLE IV.—*Causes of Death in Fatal Cases.*

Shock: (1) twenty-four hours after an exploratory incision in a case of tubercular disease of the uterine appendages, &c.; (2) during removal of an exceptionally large ovarian tumour; and (3) after vaginal hysterectomy for cancer of the cervix . . . . .	3
Hæmorrhage from slipping of ligature after ovariectomy . . . . .	1
Exhaustion from carcinomatous disease in pelvis, the ovary having been removed for carcinoma six weeks previously . . . . .	1
Intestinal obstruction: (1) from inflammatory adhesions six days after abdominal section, in a case of suppurating ovarian cyst; (2) from recurrence of disease in pelvis ten months after removal of ovary for fibro-sarcoma . . . . .	2
Total . . . . .	<hr/> 7

*Abdominal Section.*

The number of cases of abdominal section during the year was fifty-seven. They are arranged as before in two tables.

Table I includes all the cases in which the operation was performed for ovarian or broad ligament tumours. These cases are nineteen in number, of which two died from the operation, and one, a case of carcinoma, died six weeks after the operation from recurrence of the disease. Of the two deaths from the operation one occurred from hæmorrhage, due to the escape of the outer part of the pedicle from its ligature. The abdomen was reopened with as little delay as possible and the pedicle secured, but the patient unfortunately did not rally from the combined effects of the loss of blood and a second operation. The other death took place before the operation was concluded. The tumour was probably the largest in which an attempt at removal has been made; it weighed  $154\frac{1}{2}$  lbs., about twice the weight of the patient. The following note of the case appeared in in the 'Lancet' for May 2nd, 1891: "The patient was a widow, aged forty-five, who had had no children, and who had been the stewardess on a well-known line of Channel steamers for many years. The swelling of the abdomen was first noticed nine years ago; for three years and a half it



had been so large that she had been unable to go beyond her own garden; for two years she had not left her room, and for six months she had not left her bed. She had persistently refused operation until recently. After admission on April 9th the abdomen was found to be uniformly and enormously distended by a fluctuating swelling, consisting of one large cyst distending the lower part of the thorax, and hanging down, as she sat in bed, as far as the knees, completely concealing the thighs. The girth,  $1\frac{1}{2}$  inches above the umbilicus, was 67 inches; the measurement from the ensiform cartilage to the symphysis pubis was 38 inches. The body was greatly emaciated. The appearance presented by the patient was most remarkable, but she was very cheerful. There was some albuminuria. On April 13th, preparatory to operation and in order to diminish the shock, the abdomen was punctured by a fine trocar, attached to a long india-rubber tube with the lower end placed under a measured quantity of solution of carbolic acid, and the fluid from the cyst allowed to flow away for seven hours. Seventy-four pints of thick grumous chocolate-coloured fluid escaped, containing much altered blood. The day after this an attempt was made, under ether, to remove the tumour. The whole of the anterior surface of the cyst was adherent to the abdominal wall. There were comparatively few adhesions posteriorly, but more in the pelvis. At the end of half an hour the patient became seriously collapsed and the cyst was quickly extracted. It was a large, thick-walled, single (inflamed) cyst of the left ovary. The patient died before the closure of the abdominal wound had been completed, in spite of persistent efforts at resuscitation." Could this patient have been prevailed upon to have the tumour removed earlier, before it had attained such colossal dimensions, and before hæmorrhage and inflammation had taken place, the operation would have been an exceedingly simple and easy one, and the result almost certainly favourable. As it was, the operation was a desperate undertaking for a desperate condition. Had I been intent on keeping my mortality statistics low, I should not have ventured upon an operation where the odds were so terribly against success, but it seemed to me that the

patient, having given her consent and accepted the risk, ought not to be allowed to die without an attempt being made to save her.

Amongst the cases of recovery was that of a girl, aged nineteen, with a solid sarcomatous tumour of the right ovary, 1 lb. 3½ oz. in weight, without adhesions. At the time of writing, two years after the operation, there is no sign of recurrence ; the patient is in good health and able to do her work.

No fewer than four of the cases tabulated were examples of infective papilloma (Nos. 2, 5, 9, and 10). In one case the papillomatous growth was undergoing colloid degeneration. Both ovaries were cystic. On one side the main cyst had undergone rupture, which no doubt accounted for the ascites present. In the second case also both ovaries were cystic, one of the cysts in each ovary being in a state of suppuration. In the third case both ovaries were diseased, one being the seat of a mass of proliferating new growth, the other of a densely adherent cystic adenoma. Nothing was done on this occasion beyond exploring the abdomen and removing the ascitic fluid, the quantity of which was considerable (seventeen pints). For three months there was no return of the effusion. After that the abdomen again began to be enlarged, and, at the end of the year, I reopened the abdomen and removed the whole of the papilloma. The patient has now remained well for over twelve months. In the fourth case the disease again was bilateral and associated with cystic adenoma. Both ovaries were removed, and this patient, like the rest, made an excellent recovery.

Two examples of twisted pedicle occurred during the year. In one case the result had been acute inflammation of the cyst-wall producing universal and highly vascular adhesions to all the surrounding parts. In the other the extreme pain and tenderness were due to the hæmorrhage that had taken place, as a result of the venous strangulation, both into the interior of the cyst and amongst the tissues of its wall. Both patients made an uninterrupted recovery.

There were two cases of dermoid of the ovary. In one of these there was an ordinary cystic adenoma of the right

ovary, and a dermoid cyst of the left ; both were shown under the microscope to be undergoing carcinomatous degeneration. The other was the case of a woman who had been recently delivered in the maternity home-patient department of the hospital. She was not aware, previously to her confinement, that she had a tumour, and when she was admitted to the hospital, nineteen days after delivery, it was thought that the abdominal swelling, which had only been noticed the previous day and was behind the uterus, might be a hæmatocele. She had had a high temperature for a fortnight, that is from the fifth day after delivery, but she had had no rigor or sickness and had not complained of pain until within the past four or five days. During the night of June 2nd—3rd there occurred, along with an action of the bowels, a discharge of about a pint of thick foetid pus *per rectum*. The temperature at once fell to normal. Pus continued to pass with each evacuation until the 7th June. On the 13th the temperature again rose, and the abdominal swelling was evidently increasing again. Next day there was a further escape of pus from the rectum and this continued, without diminishing the temperature, up to the 18th, when abdominal section was performed. The swelling then proved to be a suppurating dermoid of the right ovary, containing a mass of hair and 28 fl. oz. of thick yellow fluid. The cyst was everywhere adherent and a direct communication existed between it and the right Fallopian tube, which was in a state of acute suppurative inflammation. The cyst had also opened, by ulceration, into the rectum. The operation was one of extreme difficulty and occupied two and a half hours. Notwithstanding the utmost care some of the foetid contents of the cyst escaped during the operation, through rents in the wall, into the abdominal cavity. The cyst was eventually separated and removed, along with the Fallopian tube, the peritoneum freely flushed with hot boracic acid solution, a drainage-tube inserted, and the abdominal incision closed. Convalescence was somewhat prolonged owing to protracted suppuration, but on September 19th, a week after the patient had left the hospital, she wrote to say the sinus had closed. There has been no further discharge and the patient remains well.

In one of the cases of suppurating ovarian adenoma (No. 17) the change in the contents of the cyst had given rise to an accumulation of the gaseous products of decomposition within the cyst. The result was that the percussion-note over the tumour was tympanitic. I have already, in a paper contributed to a previous volume of these reports ('St. Thomas's Hosp. Reports,' vol. xvii, p. 142), had occasion to allude to the occasional occurrence of this phenomenon.

This case (No. 17) presented another point of interest. Inflamed, and especially suppurating, cysts are always adherent to surrounding parts, and, when the inflammation has been of long standing, these parts themselves become the seat of various inflammatory changes. In the case of the intestine the result is that the wall becomes thickened, softened, and friable, and, when the support of the adherent cyst is removed, is liable to give way under the strain of coughing, sneezing, laughing, or painful defecation, and to allow the contents of the bowel to escape. The patient, A. S—, was an example of this. On the evening of September 7th (the operation having taken place on the 1st) she felt something give way whilst she was laughing. Soon afterwards, on the same evening, a fæcal odour was perceived on removing the dressings, and next morning a decided stain appeared on them. This continued for ten days, when the rupture finally and spontaneously closed. So constantly does spontaneous healing take place under similar circumstances that the accident has long ceased to cause me serious anxiety.

There was only one case of parovarian cyst in the series. The cyst was removed and is now in the hospital museum. The patient made an absolutely uninterrupted recovery.

The cases in Table II are thirty-eight in number. They comprise twenty-nine cases of removal of diseased uterine appendages; two cases of removal of the normal tubes and ovaries for uterine fibroids; one case of hydramnion (mistaken for an ovarian cyst); one of Cæsarian section; one of perforation of the appendix vermiformis; one of unruptured tubal gestation with apoplexy of the ovum; one of tubercular peritonitis; one of removal of a sub-peritoneal fibroid



of the uterus; and one of evacuation of a small retro-peritoneal abscess probably connected with inflamed glands.

Two cases in this series proved fatal. One of the patients died from intestinal obstruction, due to some coils of bowel falling into the space left vacant by the removal of a suppurating ovarian cyst and becoming adherent to a part of the pelvic wall from which the cyst had been separated. The other died from shock twenty-four hours after an operation lasting three hours. The case was one of tubercular disease of the tubes, ovaries, and uterus, with a large intra-peritoneal abscess that had originated in the pelvis and had already opened at the umbilicus. The operation was one of extreme difficulty and severity, and would not have been undertaken except under a strong sense of duty.

Altogether, considering the very serious nature of many of the operations in this Table, a mortality of one in nineteen cannot be considered excessive.

Cases 1, 2, 3, 4, 6, 7, 8, 9, and 11 have been communicated in full detail to the Obstetrical Society of London in a paper published in the 'Transactions' for 1892, "On the Value of Abdominal Section in certain cases of Pelvic Peritonitis." The case of Cæsarian section was also the subject of a paper read before the same Society. The case of unruptured tubal gestation, with apoplectic ovum, was described in a paper on tubal gestation in the last volume of these reports.

In accordance with the plan adopted last year, I may conclude this report by summarising the various conditions found in the twenty-nine operations undertaken for disease of the uterine appendages. In twenty-three of the twenty-nine cases the disease was of a suppurative character. In nine cases the tubes were the seat of the suppuration (in two of these there was also an intra-peritoneal abscess); in seven cases the ovary was the suppurating organ, and in five both tubes and ovaries contained pus. In the remaining two cases the source of the suppuration was not discovered. In one a number of intra-peritoneal collections of pus existed, along with disease of the Fallopian tube, which, however, at the time of operation was not itself suppurating. In the other the intestines were so deeply involved in the



matting of the pelvic viscera that the operation was not completed. A profuse discharge of pus took place a few days later from the rectum with complete relief to the symptoms. Of the cases of ovarian suppuration, three were complicated with salpingitis, two were of a tubercular character and were associated with tubercular disease of the Fallopian tubes, and, in one instance, with tubercle of the peritoneum, whilst one, a case of multiple abscesses in the ovary, was complicated with a fistulous communication between one of the ovarian abscesses and the vagina. Of the cases in which both tube and ovary were the seat of suppuration, one was the advanced case of tubercle of tubes, ovaries, and uterus already alluded to, in which a large intra-abdominal abscess had formed, and had burst at the umbilicus, and in which the operation proved fatal.

Of the six non-purulent cases, two were cases of salpingitis, one of which was complicated with a blood-cyst of the ovary; and four were cases of hæmatosalpinx with intra-peritoneal hæmatocele, in one of which were found membranous products of conception.

As to the results, twenty-seven of the patients recovered and two died. Of the former, nineteen recovered without complication; one suffered from broncho-pneumonia and one from cystitis during convalescence; one had a fæcal fistula and was transferred to the Surgical Wards; and five had some pelvic suppuration with a sinus at the lower angle of the wound. In only one case had the sinus failed to close when the patient was last seen.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of other ovary.	Glass drainage tube.	Peritoneum flushed.	Result of operation.	Remarks.
1	R. M. Clerkenwell	52	M.		1890 Dec. 10	Cystic adenoma of right ovary; dermoid cyst of left ovary; both undergoing carcinomatous degeneration	Recent, easily separated, but highly vascular, to uterus, back and sides of pelvis and omentum	See "Nature of tumour"	53 hours	No	R.	Highest temp. 99·8°. Left hospital Jan. 10th, 1891, in good health and spirits. March 18th, 1891.—Mr. Shattock reported the growth to be columnar-celled carcinoma.
2	M. D. Colchester	38	M.		1891 Jan. 22	Cystic adenoma of both ovaries, with infective papilloma, undergoing colloid degeneration; rupture of main cyst on left; ascites	Omental, slight	See "Nature of tumour"	None	Yes	R.	Highest temp. 100·8°. No sickness. Left hospital well Feb. 14th.
3	K. E. Orpington	32	M.		Jan. 30	Cystic adenoma of both ovaries; pedicle of tumour on right side twisted; cyst inflamed	Universal and very vascular, to abdominal wall, intestines, and omentum	See "Nature of tumour"	44 hours	Yes	R.	Pulse 2nd day 138 to 150; 3rd day 120. Highest temp. 100°. Excellent recovery. Left hospital well Feb. 22nd.
4	M. B. Balham	37	S.		Feb. 12	Inflamed thick-walled suppurating cyst of left ovary, with thickened and elongated Fallopian tube, occluded at its distal end	Universal in pelvis	Normal	44 hours	Yes	R.	Temp. before operation 97·8° to 99·4°, usually normal; after operation 95·8°; during convalescence 98° to 101·8°. Broncho-pneumonia first week after operation. Left hospital well March 22nd.

Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of other ovary.	Glass drainage tube.	Peritonium flushed.	Result of operation.	Remarks.
5 E. C.	Littleton, Wilts	47	M.	1891 Feb. 20	Cystic disease of both ovaries; all the cysts containing infective papilloma; one cyst in each tumour suppurating	Firm, numerous, and vascular, to intestine, mesentery, omentum, and wall of pelvis None	See "Nature of tumour"	4-4 hours	Yes	R.	Bleeding at first somewhat considerable, so that propriety of reopening abdomen was considered. Suppuration in suture tracks. Temp. 6th and 7th days 99.4° to 101.8°; after 8th day normal. Left hospital well March 28th.
6 L. C.	Alton, Hants	19	S.	April 1	Solid sarcoma of right ovary, 4 in. x 5 in., weight 1 lb. 3½ oz.	Universal None	Normal, removed	None	No	R.	Recovery uninterrupted; highest temp. 100.4° Aug. 25th, 1891.—No pain or discomfort of any kind; no loss of flesh; no sign of recurrence. Has not menstruated since operation.
7 C. W.	Lewes	45	W.	April 14	Enormous cystic adenoma of left ovary; weight 154½ lbs.	Universal anteriorly; few behind, none in pelvis None	Not recorded	—	—	D.	Died on the operating table from the shock. See 'Lancet,' vol. i, 1891, p. 999.
8 C. P.	Battersea	48	M.	April 30	Cystic adenoma of right ovary, twisted pedicle, hæmorrh. into cyst and cyst wall; weight 9 lbs.	None	Normal	24 hours	No	R.	Recovery uninterrupted. Left hospital well June 3rd.
9 M. A.	St. Luke's, E.C.	37	M.	May 28	Papillomatous cyst of left ovary; cystic adenoma of right; ascites. Operation (beyond removal of ascitic fluid) simply exploratory	Dense, in pelvis	See "Nature of tumour"	None	No	R.	No attempt was made on this occasion to remove the tumours. Patient remained well for 3 months. At end of 6 months was readmitted, and on Dec. 31st, 1891, the abdomen was reopened, and the tumours successfully removed.

10	L. R. W.	Brompton	49	M.	June 1	Papillomatous cystic adenoma of both ovaries; weight of left 9 lbs. 12½ oz.; of right 9½ oz.; cornuous fibromata on surface of cyst	None	See "Nature of tumour"	None	No	R.	Recovery uninterrupted. No sickness. Highest temp. 100·4°. Left hospital well June 24th.
11	I. W.	Oxford St.	43	S. 1. para	June 12	Cystic adenoma of both ovaries; weight of left 15 lbs. 6 oz.; right cystic, but not much enlarged	None	See "Nature of tumour"	None	No	D.	Hæmorrhage, from slipping of ligature from pedicle, a few hours after operation; abdomen reopened; hæmorrhage arrested. Death from syncope 3 hours after second operation, 94 hours after first.
12	E. D.	Blackfriars	35	M.	June 18	Suppurating dermoid cyst of right ovary, communicating with suppurating left tube and with rectum	Universal	Normal	48 hrs., indiarubber tube inserted later	Yes	R.	Prolonged suppuration. Left hospital stout, well, and cheerful, but with sinuss still discharging. Sept. 2nd.—Within a week the sinuss had closed.
13	S. F.	Sutton, Surrey	50	M.	June 25	Cystic adenoma of left ovary; weight 11 lbs. 7¾ oz.	None	Not recognised	48 hours	No	R.	Recovery uninterrupted. Highest temp. 99·8°. Left hospital well July 18th.
14	E. B.	London	30	S.	June 27	Parovarian cyst in right broad ligament, 5 in. × 4 in.	None	Both ovaries thick, corrugated, and opaque from chronic inflammation; removed	24 hours	No	R.	Recovery uninterrupted. Left hospital well in three weeks.
15	L. P.	Westminster	45	S.	July 2	Cystic adenoma of right ovary; ascites (probably due to hepatic cirrhosis); weight of tumour 10 lbs. 4 oz.	None	Healthy	48 hours, then rubber tube for 18 hours	No	R.	Some sickness first day or two; recovery then uninterrupted. Left hospital well Aug. 1st. Dec. 4th, 1891.—Remains well; is a total abstainer; no return of ascites.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of other ovary.	Glass drainage tube.	Peritonium flushed.	Result of operation.	Remarks.
16	M. M.	Kennington	37	S.	1891 July 17	Cystic adenoma of the left ovary; weight 13 lbs. 6 oz.	None	Normal, except for a distended follicle, which was punctured	48 hours, re-placed for 24 hours by a rubber tube	No	R.	Temp. evening of 18th 101.2°; on and after 24th normal. Left hospital well Aug. 17th.
17	A. S.	Lambeth	24	S. 1-para	Sept. 1	Suppurating cystic adenoma of left ovary, containing gas, and hence giving a resonant note on percussion. Diameter of collapsed cyst 3 $\frac{1}{4}$ in.	Dense and universal	Normal	48 hours, later a rubber tube	Yes	R.	Temp. before operation normal. Whilst laughing on evening of 7th felt something give way, and noticed a faecal smell soon afterwards. Next day a decided faecal stain on dressings, which continued to appear daily for 10 days, a purulent discharge following. Left hospital well Oct. 22nd; sinus closed.
18	J. K.	Kennington	53	M.	Sept. 17	Cystic carcinoma of right ovary; hemorrhage into and rupture of cyst; 9 pints 4 fl. oz. ascitic fluid; tumour 7 in. x 6 in.; weight 3 lbs. 1 oz.	Several, to abdominal wall, omentum, mesentery, and intestine	Cystic, adherent, not much enlarged; not removed	48 hours, then india-rubber tube through-out	No	D. 6 wks. after operation.	Death from secondary growth and exhaustion.
19	E. B.	Wimbledon	31	S.	Nov. 20	Cystic adenoma of right ovary; weight 13 lbs. 8 $\frac{1}{4}$ oz.	None	Normal	46 hours	No	R.	Patient an imbecile. Cystitis during recovery. Highest temp. 101°. Left hospital well Dec. 19th.



SPECIAL TABLE II.—Abdominal Section for other than Ovarian or Broad-ligament Tumours.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Glass drainage tube.	Periton. flushed.	Result of operation.	Remarks.
1	E. C.	Lambeth	25	M.	1890 Nov. 28	Removal of diseased uterine appendages	Suppurative disease of right ovary; salpingitis	Right ovary and tube removed	24 hours, later rubber tube	No	R.	Suppuration from wound, and on one occasion a stain of faeces. Sinus still discharging when patient left hospital, Jan. 24th, 1891.
2	E. S.	Richmond	25	M.	Dec. 17	Removal of diseased uterine appendages	Double pyosalpinx	Both tubes removed; ovaries not discovered	48 hours, then rubber tube for 24 hours	Yes	R.	Shock considerable; rapid pulse for 2 days; then uninterrupted recovery. Highest temp. throughout 100-2°.
3	E. J. S.	Battersea	25	M.	Dec. 18	Removal of diseased uterine appendages	Haematosalpinx (right) with haematocoele, and occlusion of left tube	Tubes and ovaries removed	44 hours, later rubber tube	Yes	R.	Suppuration in pelvis; sinus still open on leaving hospital Jan. 18th, 1891; closed Feb. 7th.
4	I. E.	Bermondsey	32	M.	1891 Jan. 8	Removal of diseased uterine appendages	Purulent salpingitis (left); right hydro-salpinx	Tubes and ovaries removed	24 hours	No	R.	Recovery uninterrupted. July 15th, 1891. — A broad ligament cyst was removed from left side by Dr. Hayes at King's College Hospital.
5	E. B.	Wimbledon	41	M.	Jan. 15	Removal of ovarian tumour	Hydramnion; no tumour	Abdominal wound closed immediately, and men-branes ruptured <i>per vaginam</i> , 19½ pints of liquor anui escaped	None	No	R.	Left hospital well Feb. 25th. On April 7th uterine canal measured, length normal.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Glass drainage tube.	Petition flushed.	Result of operation.	Remarks.
6	K. W.	Peckham	23	S.	1891 Jan. 15	Removal of diseased uterine appendages	Small ovarian blood-cyst on left side, with chronic enlargement of adjacent tube	Left ovary and tube removed	None	No	R.	Recovery uninterrupted.
7	C. P.	Peckham	31	M.	Jan. 22	Removal of diseased uterine appendages	Hæmatosalpinx (left) with small hæmatocele, and hydrosalpinx on right side; both ovaries cystic, size of pigeon's egg	Tubes and ovaries removed	48 hours, replaced by rubber tube for 24 hours	Yes	R.	Some suppuration in pelvis during convalescence. Left hospital well Feb. 25th; wound firmly healed.
8	K. W.	Streatham	22	M.	Jan. 29	For chronic pelvic abscess, with opening into vagina	Chronic suppurative ovaritis (right); fistulous communication between one of the ovarian abscesses and the vagina	Right tube and ovary and left tube removed	44 hours	Yes	R.	Abscess formed in abdominal wall; no pelvic suppuration; some cystitis. Highest temp. during convalescence 99.8°.
9	F. C. B.	Finsbury Square	24	S.	Feb. 5	Removal of diseased uterine appendages	Double purulent salpingitis; intra-peritoneal abscess	Tubes and ovaries removed	48 hours	Yes	R.	Patient was suffering from acute gonorrhœa at time of operation, and from so-called gonorrhœal rheumatism. No pelvic suppuration during convalescence.
10	R. J.	Hampstead	32	S.	Feb. 5	Oöphorectomy for uterine fibroids	Appendages on left side behind the tumour, and difficult to reach; those on right in front	Ovaries and tubes removed	None	No	R.	Left hospital well March 5th. Jan., 1892.—Stout, well, and free from discomfort; small hernia lower angle of scar.
11	M. W.	Wandsworth Road	19	S.	Feb. 26	Removal of diseased uterine appendages	Double purulent salpingitis, with suppurating cyst of left ovary, tube and ovary communicating	Tubes and ovaries removed	44 hours	Yes	R.	Recovery without suppuration, except in suture tracks.

12	M. C.	Camberwell	38	M.	March 5	Exploratory, for inflammation on right side of pelvis; uterine appendages having been removed in Liverpool 3 years ago	Perforation of vermiform appendix; tumour in right iliac fossa, consisting of omentum and intestine, with abscess in centre	Omentum removed, intestine separated, appendix dissected out, opening in bowel closed	24 hours	No	R.	Operation jointly performed by the obstetric physician and the resident assistant surgeon.
13	H. O.	Southwark	27	M.	March 23	Exploratory, for tumour, due either to enlargement of prolapsed and adherent left ovary or extra-uterine gestation	Gestation-sac amidst soft blood-clot in expanded outer end of left Fallopian tube; membranes, amniotic cavity, and chorionic villi, but no fœtus found; right tube occluded and adherent	Tubes and ovaries removed	25 hours	Yes	R.	Thick decidua passed <i>per vaginam</i> day following operation. Recovery interrupted. Left hospital well April 22nd.
14	H. H.	Camberwell	30	M.	March 23	Removal of diseased right uterine appendages	Chronic inflammation of right tube; tube adherent to intestine	Right tube and ovary removed	44 hours	No	R.	Uninterrupted recovery. Highest temp. 99.4°. Left hospital well April 18th.
15	A. S.	Beeches,	31	M.	April 9	Removal of diseased left uterine appendages	Tubercular abscesses of left ovary; tubercular disease of both tubes; milary tubercle of peritoneum	Tubes and ovaries removed	44 hours	No	R.	Temp. before operation normal; highest temp. after 100.2°. Left hospital, feeling well, May 3rd.
16	H. P.	Pontypridd	36	M.	April 9	Oöphorectomy for uterine fibroids	Left appendages in normal situation; right deeply-seated and adherent	Ovaries and tubes removed; a subserous fibroid also removed	None	No	R	Acute lobar pneumonia during convalescence.
17	M. D.	Kennington	38	M.	April 16	Removal of diseased uterine appendages	Small suppurating cyst of left ovary; right hydrosalpinx	Right tube and ovary removed	44 hours	Yes	D.	Died 11.55 p.m., April 22nd (six days after operation), P.M.—Intestinal obstruction due to adhesions in pelvis; no peritonitis.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Glass drainage tube.	Periton. flushed.	Result of operation.	Remarks.
18	E. P.	Marlborough	27	S.	1891 April 30	Removal of diseased left Fallopian tube	Hæmatosalpinx (left) containing membranous products of conception; blood in peritoneal cavity from open fimbriated end of distended tube	Left tube removed	44 hours	Yes	R.	Recovery uninterrupted. Highest temp. 100°. Left hospital well June 3rd.
19	E. S.	Clapham	39	M.	May 25	Exploratory for ascites with pelvic tumour	Sub-peritoneal fibroid of uterus with cystic cavities containing altered blood; 17 pints 14 fl. oz. ascitic fluid	Tumour removed with right tube and ovary; large subserous cyst punctured; 34 fl. oz. fluid removed	50 hours	Yes	R.	Temp. evening after operation 102°; highest temp. after that 100·6°. Excellent recovery. Left hospital well June 24th.
20	E. A. F.	Camberwell	20	S.	June 4	Exploratory, for source of abdominal abscess already opened. Suspected tubercle of uterine appendages	Tubercular disease of ovaries and tubes; intra-abdominal abscess opening at umbilicus	Tubes and ovaries removed	Until death	Yes	D.	Operation lasted 3 hours; hæmorrhage very difficult to arrest. Died from shock in 24 hours. P.M.—No tubercle elsewhere, except in the uterus.
21	E. W.	Brixton	41	S.	June 11	Removal of diseased left uterine appendages	Suppurative inflammation of left Fallopian tube; intra-peritoneal abscess	Left tube and ovary removed	44 hours	Yes	R.	Superficial suppuration in wound. Recovery delayed by troublesome intestinal distension. Left hospital well Aug. 15th.
22	M. S.	Fulham	22	M.	June 26	Removal of diseased uterine appendages	Suppurating tubo-ovarian cyst (right), pyosalpinx (left)	Tubes, ovaries, and vermiform appendix removed	44 hours, then rubber tube 54 hours	Yes	R.	No suppuration after operation; some vomiting first 3 days, recovery then rapid. Left hospital well July 24th.

23	A. B.	Clapham	29	M.	July 2	Removal of right tube, distended (probably by an apoplectic ovum), with either a cyst of the ovary or a hamatocele	Hamatosalpinx (right) with hamatocele. No fetus discovered, or other products of conception	Distended right tube and normal right ovary removed; hamatocele emptied	48 hours	Yes	R.	Raised temp. from 20th to 25th day without discovered cause. Cystitis. Left hospital well Aug. 15th. Last seen Nov. 17th: well, very little pain or discomfort.
24	L. B.	Lambeth	20	S.	July 16	Removal of diseased uterine appendages	Tubercular abscesses of left ovary; tubercular disease of both Fallopian tubes	Ovaries and tubes removed	24 hours after operation	No	R.	Bowel wounded during operation; edges of rent secured to abdominal wound. Sept. 3rd.—Transferred to Surgical Ward for treatment of fecal fistula.
25	L. O.	Clapham	22	M.	July 23	Removal of diseased uterine appendages	Small suppurating cyst of right ovary; acute inflammation of right tube	Right ovary and tube removed	48 hours	Yes	R.	Recovery uninterrupted. Left hospital well Sept. 4th.
26	C. M.	Chelsea	23	M.	Aug. 18	Removal of diseased left uterine appendages	Mating of parts on left side of pelvis and in retro-uterine pouch; purulent collections amongst the adhesions; inflamed left tube	Left tube removed (operator: Mr. Makins) by rubber tube	96 hours, then replaced by rubber tube	Yes	R.	Temp. high before operation; highest record after 99.4°. Large quantity of pus passed <i>per vaginam</i> on 4th day. Recovery uninterrupted. Left hospital well Sept. 22nd.
27	E. F.	Wimbledon	37	M.	Aug. 24	Removal of diseased uterine appendages	Purulent (right) salpingitis	Right tube and part of right ovary removed	44 hours	Yes	R.	Some abdominal distension first 3 days; otherwise recovery uninterrupted. Left hospital well Sept. 12th.
28	E. N.	Peckham	37	M.	Aug. 27	Removal of diseased uterine appendages	Left pyosalpinx	Left tube and ovary removed	70 hours, then rubber tube to Sept. 2	Yes	R.	Some abdominal distension 4th and 5th days; from that time recovery uninterrupted. Left hospital well Oct. 2nd.



Case No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Object of operation.	Condition found.	Nature of operation.	Glass drainage tube.	Periton. flushed.	Result of operation.	Remarks.
29	E. B.	Battersea	25	M.	1891 Aug. 28	Removal of diseased uterine appendages	Double purulent salpingitis	Tubes and ovaries removed	50 hours, later (12th to 19th day) rubber tube	Yes	R.	Purulent discharge from lower angle of wound on 12th day. Left hospital well, but with small sinus, Sept. 26th. Discharge finally ceased Nov. 13th. Recovery uninterrupted. Highest temp. 99.8°. Left hospital well Sept. 23rd.
30	A. C.	East Greenwich	21	S. I. para	Aug. 31	Removal of diseased uterine appendages	Pyosalpinx (right)	Left tube and ovary removed	20 hours	Yes	R.	Recovery uninterrupted. Highest temp. 99.8°. Left hospital well Sept. 23rd.
31	E. P.	Brixton	37	S.	Sept. 10	Exploratory, for suspected suppurating ovarian cyst	Tubercular peritonitis, with tense intra-peritoneal collection of serum	3 fl. oz. serum evacuated; nothing removed	None	No	R.	Urine before operation contained 4th albumen; after operation albumen gradually disappeared. Left hospital Oct. 6th.
32	E. T.	Waterloo Road	36	M.	Sept. 11	Removal of diseased uterine appendages	Double salpingitis; abscess in left ovary; dermoid cyst of right ovary	Tubes and ovaries removed	24 hours	No	R.	Some abdominal distension on 3rd day; otherwise recovery uninterrupted. Highest temp. 100.4°. Left hospital well Oct. 3rd. Last seen Dec. 4th; health better than for many years.
33	C. A.	Vauxhall	24	M.	Sept. 14	Removal of diseased uterine appendages	Dense adhesions of pelvic contents, including much small intestine	Nothing removed	48 hours, then rubber tube for 12 days	No	R.	Fæcal discharge from wound 3rd to 13th day, then ceased; abscess discharged per rectum 17th day. Left hospital Oct. 17th; wound closed. A month later a further discharge of pus per rectum; general condition good.

34	J. T.	Lambeth	40	M.	Sept. 21	Removal of diseased uterine appendages	Hydro- and pyosalpinx (right); hydrosalpinx (left)	Tubes and ovaries removed	24 hours	No	R.	Recovery uninterrupted. Left hospital well Oct. 16th.
35	L. W.	Penge	33	M.	Sept. 24	Exploratory, for suspected disease of uterine appendages	Small suppurating ovarian cyst; both tubes occluded and inflamed; the left contained pus	Tubes and ovaries removed	24 hours	Yes	R.	Prolonged collapse. Recovery then uninterrupted. Left hospital well Oct. 22nd. A month later was looking and feeling well.
36	B. M. J.	Fimlico	21	M.	Oct. 8	Cæsarian section for deformed pelvis	Pregnant uterus	Delivery of living male child	None	No	R.	Full report communicated to Obstet. Soc.; see 'Transactions' for 1892.
37	M. C.	Peckham	22	M.	Oct. 22	Removal of diseased Fallopian tubes (gonorrhæal)	Double pyosalpinx; abscess in left ovary	Tubes and ovaries removed	48 hours	No	R.	Recovery uninterrupted, except by a slight attack of broncho-pneumonia. Left hospital well Nov. 19th.
38	M. W.	Waterloo Road	23	M.	Oct. 29	Exploratory, for suspected cyst of right ovary or tubal gestation	Small suppurating sub-peritoneal cyst on posterior pelvic wall; pelvic peritonitis; occlusion of both Fallopian tubes	Tubes and ovaries removed; abscess evacuated	24 hours	No	R.	Recovery uninterrupted. Left hospital well Dec. 4th.



# STATISTICAL REPORT

OF

## THE OPHTHALMIC DEPARTMENT

### FOR THE YEAR 1891.

By C. H. USHER, M.B., B.C.CANTAB.,  
LATE OPHTHALMIC HOUSE SURGEON.

DURING the year there were 3995 new out-patients. 238 in-patients were admitted, and 207 major operations were performed.

#### *Table of In-patients.*

Amblyopia, tobacco . . . . .	3	Granular lids . . . . .	3
„ functional . . . . .	1	Hyalitis and iritis . . . . .	2
Anterior staphyloma . . . . .	1	Iritic adhesions after extraction . . . . .	1
Burn with iron . . . . .	1	Iritis, rheumatic . . . . .	8
Cataract, senile . . . . .	39	„ syphilitic . . . . .	4
„ congenital . . . . .	3	„ serous . . . . .	1
„ lamellar . . . . .	6	Keratitis, interstitial . . . . .	4
„ traumatic . . . . .	5	„ ulcerative . . . . .	1
Conical cornea . . . . .	1	Kerato-iritis . . . . .	1
Conjunctival adhesions . . . . .	1	Lacrimal abscess . . . . .	4
Choroido-retinitis . . . . .	1	Lids, disease of . . . . .	1
Corneal opacities . . . . .	5	Lost eyes . . . . .	6
„ ulcers . . . . .	18	Lupus of palpebral conjunctiva . . . . .	1
„ „ hypopyon, dendritic, . . . . .		Membrane after extraction . . . . .	6
suppurating, serpiginous . . . . .	14	Myopia . . . . .	1
Detached retina . . . . .	3	Ophthalmia, purulent . . . . .	2
Ectropion . . . . .	2	„ gonorrhœal . . . . .	4
Entropion . . . . .	2	„ neonatorum . . . . .	1
„ congenital . . . . .	1	„ muco-purulent . . . . .	4
Glaucoma, acute . . . . .	2	Ophthalmoplegia externa . . . . .	1
„ subacute . . . . .	7	Optic atrophy . . . . .	1
„ chronic . . . . .	6	„ neuritis (double) . . . . .	6
„ secondary . . . . .	4	„ „ retro-bulbar . . . . .	1

Orbital abscess . . . . .	2	Retinitis pigmentosa . . . . .	1
„ cellulitis . . . . .	2	Strabismus, convergent . . . . .	3
„ tumour . . . . .	1	„ divergent . . . . .	2
Paralysis of ocular muscles . . . . .	8	Sympathetic iritis . . . . .	1
Plastic operation (ocular conjunctiva) . . . . .	1	Trichiasis . . . . .	5
Prolapsed iris . . . . .	1	Tumour of choroid . . . . .	1
Results of hereditary syphilis . . . . .	1	Unioocular diplopia . . . . .	1
„ of ophthalmia neonatorum . . . . .	1	Wounded eyes . . . . .	14
„ of sympathetic iritis . . . . .	1		
Retinitis . . . . .	2		238

The following is a list of the chief operations performed :

*(The figures refer to the number of eyes.)*

Removal of cataract . . . . .	50	For congenital entropion . . . . .	2
Extraction . . . . .	43	„ ectropion: cauterisation of conjunctiva . . . . .	1
Suction . . . . .	2	Excision of eye . . . . .	26
Curette evacuation . . . . .	5	Cautery to corneal ulcer . . . . .	4
Needling of lamellar cataract . . . . .	7	„ to conical cornea . . . . .	1
„ of congenital cataract . . . . .	3	„ to lids for trachoma . . . . .	2
„ of traumatic cataract . . . . .	1	„ „ for entropion . . . . .	3
Discission after extraction . . . . .	14	„ to prolapsed iris . . . . .	1
Removal of membrane with forceps . . . . .	5	„ to suppurating wound after extraction . . . . .	2
Iridectomy . . . . .	42	Electrolysis of lashes . . . . .	1
For acute glaucoma . . . . .	1	Removal of dermoid tumour at sclero-corneal junction . . . . .	1
„ chronic „ . . . . .	16	Operation for ptosis . . . . .	1
„ prolapse of iris . . . . .	11	Hypopyon evacuated . . . . .	4
„ relapsing iritis . . . . .	1	Exploration of orbit . . . . .	2
„ artificial pupil . . . . .	7	Lacrimal sac destroyed with Paquelin's cautery . . . . .	2
„ anterior synechiæ . . . . .	6	For venous tumour of lid . . . . .	1
Tenotomy of internal rectus . . . . .	11	Blepharoplasty . . . . .	2
Critchett's . . . . .	3	For symblepharon . . . . .	1
Liebreich's . . . . .	1	Dermoid cyst of orbit . . . . .	1
Graefe's . . . . .	7		
Tenotomy of external rectus . . . . .	2	(Minor operations performed on out-patients are not included in this list.)	
Advancement of internal rectus . . . . .	2		
„ external rectus . . . . .	3		
For entropion . . . . .	8		
Arlt's operation . . . . .	5		
Green's „ . . . . .	3		
For spasmodic entropion . . . . .	1		



*Analysis of Cataract Operations.***I. Extraction of hard cataract—43.**

The section was made upwards in every case but two, Nos. 16 and 17, in which it was made downwards, and the lens extracted through an old coloboma.

Iridectomy was done at the time of the operation in sixteen cases. The lens was extracted without iridectomy in twenty-three cases. In four cases the lens was extracted through an old coloboma. In Nos. 5 and 17 the lens was removed with a sharp hook; in No. 30 with Pagenstecher's spoon after unsuccessful attempts with a sharp hook; a preliminary iridectomy had been done three months previously.

The anæsthetic used was a fresh 2 per cent. solution of hydrochlorate of cocain, prepared with recently boiled water. No. 18 was the only exception, ether and chloroform being given in this case.

**II. Operations for removal of soft cataract—10.**

The incision was made with a keratome in six cases.

Needling with a view to absorption was done in three cases. The lens matter was removed by curette in two cases, by suction in one, and by cannula forceps in two cases.

*Extraction of Senile Cataract.—Mr. Nettleship, 19 cases.*

Page in Bk. '91.	Report	Name and date.	Sex.	Age	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
142	1	M. A. A. Oct. 27th	F.	74	Cocain	Right; extraction upwards without iridectomy; pupil not quite round; several attempts to push back iris; some soft lens matter removed after the extraction. No eserine used. Albuminuria	Nov. 1.—Prolapse of iris	Nov. 2nd— Prolapsed iris cut off	T.—  June 23rd— + 10 Ds. + 2.5 Dc. = $\frac{6}{2+}$ . + 16 Ds. = 8 J. + 2.5 Dc.
75	2	H. B. June 5th	F.	56	"	Left; extraction without iridectomy; lens came out cleanly, leaving very little residue behind; iris replaced easily, leaving pupil nearly circular	Favorable	None	July 21st— + 13 Ds. = $\frac{6}{18}$ . + 1 Dc. + 16 Ds. = 1 J. + 1 Dc.
88	3	S. B. July 3rd	F.	73	"	Left; extraction up without iridectomy; pupil very small before operation; large hard nucleus, probably some cortex left; pupil left nearly round	Favorable	None	March 18th, 1892— + 10 Ds. = $\frac{6}{18}$ . + 16 D. = 8 J.
94	4	S. C. July 10th	F.	62	"	Left; extraction up without iridectomy; incision rather short; nucleus squeezed out with considerable mass of soft cortex behind it; some more cortex coaxed out; iris replaced by spatula	Favorable; slight iritis	None	Aug. 14th— + 8 Ds. = $\frac{6}{18}$ . + 14 Ds. = 1 J.
97	5	C. G. June 1st	M.	82	"	Left; iridectomy upwards; over-ripe lens extracted with hook; some fluid cortex escaping when capsule was opened; a little chalky-white detritus left behind, probably adhering to lens capsule	Favorable	None	

133	6	E. G. Nov. 3rd	F. 66	"	Left; extraction up with iridectomy	Favorable	None	Feb. 16th, 1892— + 13 Ds. = $\frac{6}{18}$ . + 16 Ds. = 1 J. Nov. 3rd— + 10 Ds. = $\frac{4}{6}$ . + 16 Ds. = 1 $\frac{1}{4}$ J.
126	7	E. J. Oct. 9th	F. 60	"	Left; extraction up through old coloboma. No speculum used because patient was very nervous. (Formerly iridectomy in each for + tension after iritis)	Favorable	None	
49	8	E. M. Jan. 9th	F. 56	"	Left; extraction without iridectomy; puncture and counter-puncture at sclero-corneal margin; knife brought out about 1 m.m. from sclerotic margin; lens extracted fairly easily; firm consistence; small portion subsequently extruded; iris easily replaced on gentle pressure of upper lid, but had slight tendency to prolapse after removal of pressure; pupil slightly oval, long axis vertical. Escrine	Favorable	None	March 6th— + 14 Ds. + $\frac{6}{8}$ . + 18 Ds. = 6 J.
98	9	R. P. June 16th	F. 76	"	Left; extraction with iridectomy; section rather too round at centre; lens hard amber, and very little left behind. Restless	June 18th— Haze of cornea	June 18th— Chloroform; wound cauterised	July 21st— Perception of light (pupil blocked by lymph).
35	10	H. R. Feb. 7th	F. 62	"	Right; extraction up; iris was pricked on inner side; soft lens matter subsequently extruded; attempt made to replace iris at first, but was subsequently desisted from, owing to the patient being fidgety	Favorable	None	March 6th— + 11 Ds. $\frac{+ 175 \text{ Dc.} = \frac{6}{36}}{+ 18 \text{ Ds.} = 14 \text{ J.}}$
77	11	J. C. S. June 12th	M. 67	"	Left; extracted upwards with iridectomy; hard nucleus; pasty cortex squeezed out afterwards; outer end of iris not tucked back satisfactorily; fidgety, but behaved well	Favorable	None	Oct. 30th— + 10 Ds. = $\frac{6}{8}$ partly. + 1 Dc. + 16 Ds. = 1 J. $\frac{+ 1 \text{ Dc.}}{+ 1 \text{ Dc.}} = 1 \text{ J.}$

Page in Bl. '91.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
59	12	C. T. May 15th	F.	56	Cocain	Right; puncture and counter-puncture at sclero-corneal margin; before an attempt was made to extrude lens a good deal of soft lens matter escaped; nucleus would not present; attempts then made to move it with hook; on withdrawing hook the second time the iris was caught and a small piece torn away; in consequence an iridectomy was done; corners of iris replaced with spatula	Favorable	None	June 15th— + 12 Ds. = $\frac{4}{8}$ T. + 20 Ds. = 1 J.
65	13	A. T. May 29th	F.	59	"	Left; extraction up without iridectomy; lens hard and rather small; some soft matter stroked out; pupil left round, except one place up and out	Favorable	None	Nov. 6th— + 11 D. = $\frac{8}{8}$ . + 18 D. = 1 J.
105	14	M. S. June 16th	F.	57	"	Right; extraction; section slightly corneal at centre; much semi-soft matter; hard nucleus; lens large; pupil left nearly clear	Suppuration	June 19th— Wound cauterised, galvano-cautery None	Aug. 4th— Perception of light (eye shrinking).  Oct. 6th— + 6 Ds. = $\frac{8}{8}$ partly. + 15 Ds. = 1 J.
109	15	A. W. Aug. 14th	F.	65	"	Left; extraction without iridectomy; iris replaced very easily, leaving a round pupil. Eserine used on table	Favorable		
155	16	E. W. July 3rd	F.	44	"	Right; lens extracted downwards, through the coloboma; nucleus hard and brown, probably much clear cortex left. Coloboma made for recurrent iritis	Favorable	Oct. 9th— Cocain; opaque lens matter let out with sharp- edged needle and curette. Oct. 30th— Ether and chloroform; iridectomy up with keratome	Dec. 1st— Hand at 12 inches.

26	17	J. C. Jan. 23rd	M. 47	"	Left; extraction with hook down— in after incision of capsule, and extraction of piece of capsule and pigmented membrane with forceps; lens very brown and hard, but only nucleus removed; probably much clear cortex left. Eye damaged by old sympathetic ophthalmitis	Favorable	None	March 16th— + 10 Ds. $\frac{+ 1.25 \text{ Dc.}}{+ 1.25 \text{ Dc.}} = \frac{3}{00}.$ + 18 Ds. $\frac{+ 1.25 \text{ Dc.}}{+ 1.25 \text{ Dc.}} = 12 \text{ J.}$
134	18	J. L. Oct. 5th	M. 68	Ether and chloro- form	Left; extraction up through colo- boma; only the large nucleus was removed, no attempt being made to remove any soft matter. Pre- vious iridectomy for glaucoma on Aug. 14th	Iris prolapsed, cornea flattened	None	—
49	19	E. M. April 17th	F. 56	Cocain	Right; extraction up; the iris was button-holed above close to its periphery, leaving sufficient space through which lens was subse- quently extruded; lens came out almost entire; a small portion of iris remained entangled at inner extremity of wound, which was snipped off	Favorable	None	May 11th— + 13 Ds. $\frac{+ 1.25 \text{ Dc.}}{+ 1.25 \text{ Dc.}} = \frac{6}{6} \text{ partly.}$ + 18 Ds. $\frac{+ 1.25 \text{ Dc.}}{+ 1.25 \text{ Dc.}} = 2 \text{ J.}$

*Extraction of Senile Cataract.—Mr. Lawford, 24 cases.*

22	20	J. B. March 23rd	F. 59	Cocain	Left; extraction up without iridec- tomy; iris fell forward over knife, but was not cut; lens came away well and nearly complete; a little soft matter removed afterwards. Eserine	Favorable; slight iritis	None	April 30th— + 12 Ds. $\frac{+ 1 \text{ Dc.}}{+ 1 \text{ Dc.}} = \frac{6}{9}.$ + 16 Ds. $\frac{+ 1 \text{ Dc.}}{+ 1 \text{ Dc.}} = 1 \text{ J.}$
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Page in Bl. '91.	Report	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
76	21	T. B. Nov. 10th	M.	70	Cocain	Left; extraction up with iridectomy; conjunctival flap made; iridectomy, free bleeding from iris filling anterior chamber; cornea flaccid; lens came out fairly clean, a little opaque matter left, which was not removed. Patient restless	Favorable	None	Nov. 23rd— + 10 Ds. = $\frac{4}{10}$ . + 16 Ds. = 12 J. Will require needling.
21	22	E. C. March 17th	F.	62	"	Left; extraction up without iridectomy; lens came away easily and fairly clean; some soft matter removed afterwards; iris went back without the aid of a spatula; pupil left central and nearly black. Eserine	Favorable	None. Nov. 21st, '92— Left needed	Nov., 1892— + 13 Ds. = $\frac{6}{18}$ . + 1.5 Dc. = 1 J. + 18 Ds. = 2 J. + 1.5 Dc.
67	23	J. C. Sept. 18th	M.	58	"	Left; extraction up without iridectomy; lens rather soft, came out slowly and out of shape; pupil left nearly black and central. Eserine	Favorable	None. Oct. 13th, '92— Thin membrane in pupil; left needed, but no further improvement in vision	Dec. 9th— + 11 Ds. = $\frac{6}{60}$ .
44	24	A. E. June 9th	F.	78	"	Left; extraction up; no iridectomy; lens large, brown, came out nearly quite clean; cornea thin and flaccid; very little bleeding; iris went back well; pupil left central	Iritis	None	Aug. 28th— Some ciliary redness; a. c. too deep; pupil very small; iris still discoloured.
6	25	J. F. Jan. 2nd	M.	39	"	Right; extraction up without iridectomy; cornea thin and flaccid; lens amber-coloured and hard, came out easily and nearly complete; no attempt made to remove cortical matter; iris went back well. Eserine	Favorable	None	May 4th— + 12 Ds. = $\frac{6}{18}$ . + 2 Dc. = 1 J. + 18 Ds. = 1 J. + 2 Dc.

28	26	W. F. April 16th	M. 66	"	Left; extraction up with iridectomy; incision peripheral at ends, but corneal at upper part; lens came out fairly clean; no attempt made to remove any cortex remaining	Favorable	None	May 1st— + 12 Ds. = $\frac{3}{8}$ partly. + 1.25 Dc. = $\frac{3}{8}$ partly. + 20 Ds. = 16 J. + 1.25 Dc.
57	27	A. F. Sept. 4th	F. 73	"	Left; extraction up; attempted removal of lens without iridectomy, but lens not presenting readily a small iridectomy was done; lens then came out readily; a little opaque matter removed afterwards	Favorable	July, 1892— Needled	July, 1892— + 12 D. = $\frac{6}{8}$ . + 18 D. = 12 J.
33	28	A. G. May 11th	F. 48	"	Right; extraction up; section rather irregular; iridectomy; lens cortex milky, escaped on opening capsule; nucleus came out fairly clean; a little soft matter coaxed out afterwards	Favorable	None	July 6th— + 8 Ds. = $\frac{2}{3}$ . + 14 Ds. = 10 J. Thin membrane in pupil.
69	29	E. H. Sept. 1st	M. 68	"	Left; extraction up; no iridectomy; lens came out slowly and fairly clean; escape of vitreous, which was healthy; iris went back well, and pupil was central	Suppurative iritis, without much corneal suppuration; began on 3rd day	Sept. 5th— Chloroform; left, wound characterized deeply, and chemosed conjunctiva in several places	Oct 12th— Hand movements at 1'.
14	30	G. J. Feb. 12th	M. 41	"	Right; extraction up; lens would not present; sharp hook introduced, and lens hooked three times, but tore away each time; escape of vitreous; consequently Paget-steecher's spoon used and lens removed. Preliminary iridectomy three months previously	Favorable	None	March 16th— + 10 Ds. = $\frac{1}{2}$ partly. + 1.75 Dc. = $\frac{1}{2}$ partly. + 15 Ds. = 1 J. + 1.75 Dc.
43	31	J. K. July 15th	M. 73	"	Left; extraction up without iridectomy; lens came out fairly clean, a little opaque membrane in pupil not removed; iris went back well; pupil left nearly central. Eserine	Favorable	None	Aug. 4th— + 11 Ds. = $\frac{0}{8}$ . + 1 Dc. = $\frac{0}{8}$ . + 18 Ds. = 1 J. + 1 Dc.

Page in Bk. '91.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
61	32	S. L. Sept. 8th	F.	80	Cocain	Left; extraction up; no iridectomy; lens came out easily, but left a good deal of soft matter behind, which was subsequently extruded; pupil circular, but not quite central. Eserine	Sept. 10th— Prolapse of iris	Sept. 17th— Cocain; left, prolapsed iris cut off. Jan. 8th, 1892— Left, needled	Jan. 28th, 1892— + 12 Ds. = $\frac{6}{36}$ . + 16 Ds. = 6 J.
62	33	P. A. W. Sept. 18th	F.	30	"	Right; extraction up through curved corneal incision, about 2 m.m. from margin; no iridectomy; nucleus of lens and a moderate amount of soft cortex extruded by pressure; no prolapse of iris; pupil left full of opaque lens	Favorable	Jan. 5th, 1892— Right, cocain, needled	Jan. 15th, 1892— + 11 Ds. = $\frac{6}{36}$ partly, + 16 Ds., spells 12 J.
39	34	J. W. July 2nd	M.	74	"	Right; extraction up; no iridectomy; conjunctival bleeding into a.c.; lens came out readily, but a good deal of cortex removed afterwards by finger pressure; pupil left central and nearly black. Eserine	Favorable	None	July 20th— + 12 Ds. = $\frac{6}{34}$ . + 15 Ds. = 4 J.
74	35	C. T. Sept. 18th	M.	63	"	Left; extraction up with iridectomy; iris caught on point of knife, but was not cut; small iridectomy; lens nucleus came out easily, leaving a good deal of opaque cortex, some of which was subsequently extruded; cornea flaccid and concave	Favorable	None	Dec. 21st— + 11 Ds. = $\frac{6}{34}$ . + 16 Ds. = 6 J.
74	36	C. T. Oct. 19th	M.	63	"	Right; extraction up with iridectomy; section rather long; conjunctival flap; lens extruded slowly, it was sticky and not very opaque	Favorable	None	Nov. 3rd— + 11 Ds. + 1 Dc. = $\frac{6}{15}$ partly, + 18 Ds. + 1 Dc. = 1 J.

58	37	H. T. June 11th	M. 77	"	Left; extraction up; iridectomy; lens came out nearly clean, was a large flattened lens, not very opaque in central part, but with dense cortical opacities; pupil left nearly black	Slight iritis	Sept. 22nd— Needed	Oct. 1st— + 10 Ds. = $\frac{6}{13}$ partly. + 75 Dc. = $\frac{6}{13}$ partly. + 15 Ds. + 75 Dc. = 1 J.
64	38	T. R. Aug. 28th	M. 54	"	Right; extraction up; no iridectomy; section rather irregular; much soft cortical lens matter; nucleus fairly hard; small amount of soft cortex removed subsequently; pupil left black except at extreme upper part	Favorable	None	Oct. 23rd— + 10 Ds. + 1 Dc. = $\frac{6}{13}$ partly. + 16 Ds. = 6 J.
64	39	T. R. Sept. 18th	M. 54	"	Left; extraction up; iridectomy; small piece of iris removed; lens came away easily and almost complete; pupil left black; no soft cortex	Favorable	None	Oct. 23rd— + 10 Ds. + 1 Dc. = $\frac{6}{13}$ . + 16 Ds. = 4 J.
37	40	S. P. July 2nd	F. 56	"	Left; extraction up; iris rolled forward over knife, but retracted again; lens came out nearly clean; no soft matter removed afterwards; pupil left central and black; cornea flaccid. Eschine	Favorable	None	Aug. 20th— + 11 Ds. = $\frac{6}{13}$ partly. Sept. 10th— + 16 Ds. = 1 J.
16	41	G. M. Feb. 19th	M. 54	"	Left; extraction up; iridectomy; large conjunctival flap; lens moved as a whole under the cystitome, but came out nearly complete; small amount of opaque matter removed subsequently by finger pressure; pupil left nearly black	Some iritis	None	March 10th, 1892— + 12 Ds. = $\frac{6}{13}$ . + 16 Ds. = 1 J.
16	42	G. M. Dec. 28th	M. 54	"	Right; extraction up; iridectomy; lens moved under cystitome; nucleus came out easily; a good deal of soft cortex coaxed out afterwards; pupil left nearly black	Favorable	Mar. 11th, '92— Needed	March 21st, 1892— + 13 Ds. = $\frac{6}{13}$ . + 16 Ds. = 1 J.

Page in Bk. '91.	Report No.	Name and date.	Sex.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
—	43	S. K. May 21st	M.	Cocain	Left; extraction up without iridec- tomy; a good deal of soft cortex subsequently removed; prolapse of iris removed seven days later	Progress very slow; some iritis; pupil updrawn	Dec. 1st— Left, iridectomy downwards. Dec. 15th— Left needed	Jan. 14th, 1892— + 8 Ds. = $\frac{6}{10}$ .
<i>Removal of Soft Cataract.—Mr. Nettleship, 7 cases.</i>								
68	44	M. H. Feb. 10th	F.	Chloro- form	Left; needled, one needle. Con- genital	Favorable	June 16th— Needled, two needles. Dec. 4th— Membrane removed with canula forceps None	—
5	45	J. M. Jan. 9th	F.	Cocain	Right; needled, one needle; needled sparingly at centre of lens with view to absorption. During the needling lens moved freely, and as it was a small lens, its upper edge being visible at some distance from ciliary processes, it was thought best to needle for absorption. Con- genital	Favorable	—	—
76	46	E. L. June 12th	F.	"	Left; curette extraction. Previous needling on June 5th, when lens was well broken up. Lamellar	Favorable	None	June 28th— + 15 Ds. = 14 J. letters.
58	47	C. M. May 29th	M.	"	Right; keratome incision up and out, midway between centre and edge of cornea; lens semifluid, and cleanly evacuated with curette;	Favorable	None	June 4th— + 12 Ds. = $\frac{5}{10}$ . + 20 Ds. = 14 J.



108	48	C. P. Aug. 14th	M. 25	"	lens was decidedly brown, perhaps from blood-staining from vitreous hemorrhage at time of blow; pupil left quite round. (Traumatic cataract)	Favorable	None	—
19	49	J. T. Jan. 23rd	M. 17	"	Right; needle first inserted to test consistence of membrane, wound then made with keratome at outer side of cornea, forceps inserted, and membrane withdrawn and cut off with iridectomy scissors; good clear central aperture left. (Traumatic cataract)	Iritis and + tension	—	Feb. 19th— Excision.
84	50	H. W. July 3rd	M. 5	Ether	(1) Left; separation of narrow anterior synechia with Knapp's needle, causing peripheral bleeding from iris. (2) Posterior synechia would not give way to knife. (3) Separation of mass by iridotomy scissors, and attempted extraction with cannula forceps. (4) Removal of mass with common forceps; no vitreous lost. (Traumatic cataract)	Favorable	—	—

*Removal of Soft Cataract.—Mr. Lawford, 3 cases.*

Page in Bk. '91.	Report	Name and date.	Sex.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
35	51	C. D. April 9th	M.	Chloro- form	Left; incision at inner side of cornea with keratome, and nozzle of suc- tion syringe introduced; a good deal of soft lens matter removed. Needled on April 3rd. Lamellar	Favorable	None	April 30th— + 12 Ds. = $\frac{6}{36}$ partly. + 18 Ds. = $\frac{16}{16}$ J.
78	52	A. L.	F.	Cocain	Left; needled four times—Oct. 19th, Nov. 3rd, Nov. 17th, 1891, March 31st, 1892. Lamellar	Favorable	—	L. + 11 Ds. = $\frac{6}{13}$ . + 15 D. = 8 J.
18	53	J. H. Jan. 27th	M.	Ether	Left; incision with keratome near outer margin of cornea; a good deal of lens matter spurted out at once; no prolapse occurred; a little bleeding from the lower part of iris; iris possibly touched by point of knife, when lens and aqueous rushed out. On Jan. 11th eye was wounded by a thorn	Slight iritis	None	March 20th— V. = $\frac{3}{30}$ .

R E P O R T  
OF THE  
DEPARTMENT FOR DISEASES OF THE SKIN,  
1891.

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By A. H. WOODCOCK, L.R.C.P., M.R.C.S.,

AND

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THE system of classification adopted in this year's Report has been slightly altered from that of former years, and is based upon that given in the second edition of Dr. Radcliffe Crocker's work on 'Diseases of the Skin.'

TABLE I.—Statistical Table, 1891.

Disease.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
CLASS I.— <i>Hyperæmia</i> :																											
Erythema simplex	1																1								1	1	2
CLASS II.— <i>Exudationes</i> :																											
<i>Erythema exudativum</i> :																											
Erythema multiforme	2				1																				0	3	3
" or herpes iris											1														1	0	1
" annulare																									0	1	1
" papulatum																									0	1	1
Urticaria	1		1	1	2				1				1				1				1	2			8	4	12
Prurigo of Hebra																	1								1	0	1
Eczema	6	7	8	18	4	2	12	5	11	14	9	6	14	8	11	10	7	8	10	10	13	12	6	4	111	104	215
Diseases due to pus cocci :																											
Impetigo contagiosa	2	1			1	1	1	1	3	1	1		1	1	2				1		1				13	6	19
Ecthyma					1																				2	0	2
Furunculus								1								1									3	0	3
Herpes :																											
Herpes zoster	1	1			1	1							1				1		2						7	2	9
" facialis	1								1																2	0	2
Pemphigus											1						1				1				2	2	4
Psoriasis	1	6	2	2	1	1	1	1	3	1		5	1	4	3	1	2	5	2	5	2	4	1	3	17	40	57
Pityriasis rosea																			1						1	1	2
Psoriasis keloid																									1	0	1
Lichen :																											
Lichen planus																	1	1		1		1			4	5	9

[illegible]



Disease.	Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Totals.				
																									M.	F.					
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.									
<b>CLASS VIII.—continued.</b>																															
<b>C. Diseases of Hair Follicles:</b>																															
Trichorrhæxis nodosa.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	0	1	1			
Alopecia universalis.	2	2	...	2	...	...	1	2	...	3	1	5	1	3	2	...	5	1	2	2	1	2	1	1	18	21	39				
" areata.	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	4	0	4				
Folliculitis.	1	...	...	...	...	...	...	...	1	1	2	...	1	...	...	...	...	2	...	...	...	...	...	...	7	1	8				
Sycosis.	1	...	1	...	...	...	...	...	1	1	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
<b>CLASS IX.—Parasitica:</b>																															
<b>A. Vegetable P. D.:</b>																															
Tinea tonsurans.	...	4	3	3	2	1	3	2	4	1	6	1	5	2	2	...	3	2	4	1	1	2	4	2	37	21	58				
" circinata.	...	...	...	...	...	...	1	...	1	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	2	3	5				
" versicolor.	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	0	2				
<b>B. Animal Parasites of Skin:</b>																															
Scabies.	7	1	3	2	7	4	3	1	3	3	3	2	3	1	3	...	4	1	4	3	8	2	1	...	49	20	69				
Pediculi capitis.	1	1	...	...	1	2	...	1	...	1	...	...	...	...	3	...	...	...	1	3	...	...	...	...	6	8	14				
" corporis.	2	...	4	...	...	...	...	...	3	1	1	...	...	...	...	...	1	...	1	1	1	...	1	...	13	3	16				
<b>ADDENDA.—General Diseases:</b>																															
Raynaud's disease.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	0	1	1				
Varicella.	...	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	3				
																									360	301	661				

TABLE II.—Ages in certain Diseases.

	Under 1.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Totals.
Eczema .	M 7 F 4	M 13 F 10	M 17 F 16	M 32 F 21	M 7 F 13	M 10 F 10	M 6 F 13	M 7 F 9	M 9 F 5	M 3 F 3	
Total .	11	23	33	53	20	20	19	16	14	6	215
Psoriasis .	M 0 F 1	M 0 F 0	M 1 F 3	M 6 F 6	M 4 F 9	M 3 F 9	M 2 F 8	M 1 F 3	M 0 F 1	M 0 F 0	
Total .	1	0	4	12	13	12	10	4	1	0	57
Urticaria .	M 1 F 0	M 1 F 0	M 3 F 3	M 1 F 0	M 2 F 0	M 0 F 0	M 0 F 0	M 0 F 0	M 0 F 1	M 0 F 0	
Total .	1	4	3	1	2	0	0	0	1	0	12
Erythem. exud.	M 0 F 0	M 0 F 0	M 0 F 0	M 1 F 0	M 0 F 2	M 0 F 1	M 0 F 1	M 0 F 0	M 1 F 0	M 0 F 0	
Total .	0	0	0	1	2	1	1	0	1	0	6
Tinea tonsurans	M 0 F 0	M 5 F 8	M 21 F 10	M 10 F 2	M 0 F 0	M 0 F 1	M 1 F 0	M 0 F 0	M 0 F 0	M 0 F 0	
Total .	0	13	31	12	0	1	1	0	0	0	58
Alopecia .	M 0 F 0	M 0 F 0	M 0 F 6	M 12 F 12	M 3 F 0	M 2 F 2	M 1 F 1	M 0 F 1	M 0 F 0	M 0 F 0	
Total .	0	0	6	24	3	4	2	1	0	0	40



# REPORT

OF THE

## AURAL DEPARTMENT

### FOR THE YEAR 1891.

By RICHARD LAKE, F.R.C.S.

DURING the year there were 618 new out-patients, exclusive of renewed letters. No patient has been counted more than once, though he may have attended with a new letter on separate occasions. The cases of patients admitted into the hospital with mastoid and intra-cranial inflammation secondary to ear disease are not included in this report, as they appear in the general medical and surgical reports of in-patients.

The following is a list of the chief operations performed :—

OPERATIONS.	Males.	Females.	Total.
Removal of adenoid vegetations . . . .	26	37	63
„ of aural polypi . . . .	7	8	15
Incision of membrana tympani . . . .	1	2	3
Opening of mastoid abscess . . . .	0	2	2
Total . . . .	34	49	83

N.B.—The galvano-cautery was in use during the year in the treatment of nose and throat affections.

Of the 618 cases, 19 were affected with nasal polypi, ozæna, and other diseases of the nose uncomplicated with ear disease. Of the 599 cases, the external ear was the seat of disease in 12 per cent., the middle ear in 80·8 per cent., the internal ear in 7 per cent. The average of external ear disease for the past three years being 15·4 per cent., that of middle ear disease 79·3 per cent., of internal ear 6·1 per cent.

Of the middle ear cases 46 per cent. were accompanied by suppuration, and 34·6 per cent. were not.

**EXTERNAL EAR.**

	M.	F.
Cerumen . . . . .	29 ...	18
Eczema . . . . .	2 ...	6
Inflammation of meatus . . . . .	2 ...	2
Abscess of meatus . . . . .	5 ...	2
Foreign bodies . . . . .	1 ...	2
Papilloma of meatus . . . . .	1 ...	2
Total . . . . .	40 ...	32
	<hr/> 72 = 12%	

**MIDDLE EAR.**

Chronic myringitis . . . . .	2 ...	1
Rupture of membrana tympani . . . . .	2 ...	4
Acute otitis media :		
<i>a.</i> Without perforation . . . . .	3 ...	3
<i>b.</i> With perforation . . . . .	14 ...	12
Chronic otitis media :		
<i>a.</i> With suppuration . . . . .	97 ...	91
<i>b.</i> Mucous catarrh . . . . .	8 ...	12
Chronic dry catarrh . . . . .	43 ...	53
Cicatricial membranes . . . . .	4 ...	4
Adenoid vegetations . . . . .	32 ...	55
Mastoid abscess . . . . .	1 ...	1
Aural polypi . . . . .	11 ...	9
Eustachian obstruction . . . . .	4 ...	8
Senile degeneration of membrane . . . . .	2 ...	2
Otalgia . . . . .	2 ...	5
Total . . . . .	225 ...	260
	<hr/> 485 = 80·8%	



INTERNAL EAR.		M.	F.	
Syphilis, acquired	. . . .	1	...	2
„ congenital	. . . .	4	...	0
Degeneration of 8th nerve	. . . .	6	...	2
Nerve tinnitus	. . . .	4	...	5
Aural vertigo	. . . .	8	...	4
Labyrinthine concussion	. . . .	4	...	0
Cerebral deafness following brain fever		1	...	0
Deaf-mutism, congenital	. . . .	1	...	0
Total	. . . .	29	...	13
				<u>42 = 7%</u>
Total number of ear cases.				<u>599</u>
NOSE AND THROAT	. . . .	8	...	11
				<u>19</u>
Total number of cases	.			<u>618</u>



# St. Thomas's Hospital MEDICAL SCHOOL.

## CALENDAR AND PROSPECTUS

FOR THE  
YEAR COMMENCING OCTOBER 1st 1892.



1892 & 1893.

LONDON:

PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,  
STAMFORD STREET AND CHARING CROSS.



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## MEDICAL SCHOOL.

For information on all matters relating to the Medical School, Prizes, Scholarships, &c., application should be made to the Medical Secretary, Mr. G. RENDLE, at the Hospital, Albert Embankment, S.E., personally (10 to 4, Saturday 10 to 1) or by letter.

A Register of LODGINGS suitable for Students has been recently revised, and is kept in the Secretary's Office. Information as to terms, accommodation, &c., can be obtained on application. This Register has been especially prepared with a view to the convenience of new Students for whose accommodation in lodgings or otherwise no definite arrangements have been made.

Medical Practitioners, Clergymen, and Private Families residing in the neighbourhood receive Students for residence and supervision.

### THE STUDENTS' CLUB (SOCIAL AND ATHLETIC).

This Club has been established, at considerable expense, for the convenience of Students, and is maintained jointly by a yearly grant from the Medical Staff, and the Entrance Fees of Members.

All Students are strongly advised to join the Club when they enter the Medical School.

By payment of the Entrance Fee a Student becomes a permanent member of the Club.

The Entrance Fee for a Student joining in his first year is 5 Guineas, in his second 4 Guineas, and in other years 3 Guineas.

A Student can, if he prefer it, join one Section only of the Club. The Entrance Fee for the Social or Athletic Section alone is, for First year Students, 4 Guineas and 2 Guineas; Second year Students, 3 Guineas and 1½ Guineas; and for those of other years, 2 Guineas and 1 Guinea respectively.

The Club premises are situated in the Medical School Building, and consist of a Dining Room, where between 9 a.m. and 6 p.m. refreshments can be obtained; a Smoking and Reading Room, supplied with most of the Daily and Illustrated Weekly Papers. A Cloak Room, with Lavatory and Bath Rooms, is attached.

The Social Section includes the Medical and Physical Society, and the St. Thomas's Hospital Gazette.

The Athletic section comprises the Athletic, the Cricket, the Cross Country, the Football (Rugby and Association), the Rifle, the Rowing, the Swimming and the Tennis Clubs.

The Entrance Fees may be paid to the Medical Secretary, Mr. G. RENDLE, or the Librarian, Mr. G. S. SAUNDERS.

Students who join the Athletic section only are not entitled to make use of the Club premises.

# St. Thomas's Hospital

## MEDICAL SCHOOL.

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The WINTER SESSION 1892-93 will commence on Monday, October 3rd, and terminate on March 31st.

The SUMMER SESSION will begin on May 1st, and terminate on July 31st.

The Prizes will be distributed by the Right Hon. Sir JOHN LUBBOCK, Bart., M.P., D.C.L., LL.D., F.R.S., in the Governors' Hall on MONDAY, October 3rd, at 3 P.M. During the afternoon the various Departments of the Hospital and School will be open for the inspection of Visitors.

Refreshments will be provided in the Library.

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The Annual Dinner, in which all former and present Students are invited to join, will take place the same evening at the Hotel Metropole, at 6 for 6.30 o'clock, H. LAVER, Esq., J.P., in the Chair.

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THE first Hospital of St. Thomas, within the precinct of the Priory of St. Mary Overie, being destroyed by fire in the year 1207, the prior and convent erected in the same year near the site of their house a temporary hospital. This building was in the emergency used for religious purposes; mass was said there until the priory was rebuilt. In 1228 Peter de Rupibus, Bishop of Winchester, built the Hospital of St. Mary or St. Thomas, Overie, on the opposite or eastern side of the highway, on land provided by Amicius, Arch-deacon of Surrey, and dedicated it to St. Thomas the Martyr.

The following is a translation of the "charter" of 1228:—

"The Lord Peter's charter of indulgence for twenty days granted by him for this hospital.

"Peter, by the grace of God Bishop of Winchester, to all the faithful in Christ in the diocese of Winchester, greeting. In Him who is the salvation of the faithful. As saith the Apostle, bodily discipline which consists in fasts, vigils, and other mortifications of the flesh, profiteth little, while piety availeth for all things, having the promise of the life which now is, and of that which is to come.

"Our Lord Jesus Christ among the works of piety enumerates, commends, and teaches us to fulfil six, as though more praiseworthy and more meritorious than the rest, saying, 'I was an hungred, and ye gave Me to eat; I was thirsty, and ye gave Me to drink; I was a stranger, and ye took Me in; I was naked, and ye clothed Me; I was

sick, and ye visited Me; in prison, and ye came to Me.' To them that perform these works of piety He shall grant His blessing and the glory of His heavenly kingdom, saying, 'Come, ye blessed of My Father, receive the kingdom which has been prepared for you from the beginning of the world.' But to them that neglect and do not perform works of compassion He threatens His curse and the penalty of eternal fire, saying, 'Go, ye cursed, into eternal fire, which has been prepared for the devil and his angels.' It is therefore to be borne in mind, my dearest sons, and more deeply laid to heart, how needful and how conducive to the salvation of our souls it is to exercise more readily those works of piety whereby blessing is promised to us, and the felicity of eternal life is gained.

"Behold at Southwark an ancient hospital, built of old to entertain the poor, has been entirely reduced to cinders and ashes by a lamentable fire. Moreover, the place wherein the old hospital had been founded was less suitable, less appropriate for entertainment and habitation, both by reason of the straitness of the place, and by reason of the lack of water and of many other conveniences: according to the advice of us, and of wise men, it is transferred and transplanted to another more commodious site, where the air is more pure and calm, and the supply of waters more plentiful. But whereas this building of the new hospital calls for many and manifold outlays, and cannot be crowned with its due consummation without the aid of the faithful, we request, advise, and earnestly exhort you all, and with a view to the remission of your sins enjoin you, according to your abilities, from the goods bestowed on you by God, to stretch forth the hand of pity to the building of this new hospital, and out of your feelings of charity to receive the messengers of the same hospital coming to you for the needs of the poor to be therein entertained, that for these and other works of piety you shall do, you may, after the course of this life, reap the reward of eternal felicity from Him who is the Recompenser of all good deeds, and the loving and compassionate God. Now we, by the mercy of God, and trusting in the merits of the glorious Virgin Mary, and the Apostles Peter and Paul, and St. Thomas the Martyr, and St. Swithin, to all the believers in Christ, who shall look with the eye of piety on the gifts of their alms—that is to say, having confessed, contrite in heart and truly penitent, we remit to such twenty days of the penance enjoined on them, and grant it to them to share in the prayers and benefactions made in the church of Winchester, and other churches erected by the grace of the Lord in the diocese of Winchester. Ever in the Lord; Farewell."

The Bishop of Winchester or the Archbishop seems to have granted, in 1277, to the Brethren power to elect their own Master; in a visitation, 1323, they are ordered to follow the rule of St. Augustine—the rule of the parent house—in obedience, chastity, renunciation of individual property, and the Master to eat with the Brethren.

In 1417 the Master and Brethren formed a Court of themselves,



and exercised authority within the precincts of the Hospital over persons regular or secular, and in cases civil or even criminal.

The hospital, built in 1228, had by 1507 become dilapidated and insufficient; great efforts were then made to rebuild and enlarge it.

In the Duchy of Lancaster records there is "the Rentall of Thomas Becketts hospitall in Southwarke, of all the lands and tenements belonging to the hospitall." It contains the names of the tenants and the rents paid; it is without date, but from internal evidence must be early in the sixteenth century.

Within the precincts of the hospital was the renowned printing press of James Nycolson, who, in 1527, signed the contract for the painted windows of King's College, Cambridge, as "James Nycolson, of St. Thomas's Spytell in Southwark." The most remarkable issue from this press was the first English Bible printed in England, inscribed thus—"Imprynted in Southwarke in St. Thomas Hospitale by James Nycolson. Dedicated by M. Coverdale to the King 1537."

About this time there were a Master, Brethren, and three Lay Sisters; forty beds were made up for poor, infirm, and impotent people, who were supplied with victuals and firing.

In the year 1535, Henry VIII. was excommunicated by Pope Paul III., and, declaring himself head of the church, proceeded to dissolve the Catholic houses, whose large revenues went to the Crown. There seem to have been 645 monasteries and abbeyes thus treated, twenty-eight of which had abbots with seats in Parliament, ninety colleges and free chapels, and 110 hospitals of various descriptions. It is certainly in favour of the sweeping change that so able and honest a man as Sir Richard Gresham, the Lord Mayor of London, should have put his hand to the following petition to the King:

"Most redowted, puyasant, and noble Prince \* \* \* \*—here and within the cytie of London be iij hospitalls or spytells commonly called Seynt Georges Spytell, Seynt Barthilmews Spytell, and Seynt Thomas Spytell, and the new Abbey of Tower Hill, founded of good devotion by auncient fathers, and endowed with great possessions and rents only for the reliefe, comfote, and helping of the poore and impotent people lying in every street, offending every clene person passing by the way with theyre fylthy and nasty savors. Wherefore may it please your merciful goodness, enclyned to pytie and compassion, for the reliefe of Xts very images, created to his own similitude, to order by your high authoritie, as supreme head of this Church of England, or otherwise by your sage discretion, that your mayer of your cytie of London, and his brethren the aldermen for the time being, shall and may from henceforth have the order, disposition, rule and governaunce both of all the lands, tenements, and revenues apperteynyng and belongyn to the said hospitals, governors of them, and of the ministers which be or shall be withyn any of them, and then your grace shall facillie perceyve that where now a small number of Chanons, Priests, and Monkes be founde for theyr own profit only, and not for the common utilitie of the realme, a great number of poore, needy, syke and indugent persones shall be

refreshed, maynteyned, and comforted: and also healed and cured of their infermities frankly and freely by physicions, surgeons and potycaries, which shall have stipende and salarie only for that purpose; so that all impotent persones not able to labour shall be releved, and all sturdy beggars not willing to labour shall be punished."

St. Thomas's Hospital being claimed by the King as Church property, was surrendered to him by Thomas Thirleby, the then master, on the 15th July, 1538. It was called St. Thomas à Becket's Spittil. Its yearly revenue was estimated at £266 17s. 6d., and an annual pension of 5s. 8d. was payable by the master, and another of 2s. 1d. by the curate, to the Archdeacon of Surrey. Soon after the seizure, we find that the citizens of London purchased of the Crown some of its landed estates, producing about £160 yearly. The want of the hospital thus destroyed was felt immediately. Wounded soldiers from the army in France, and the sick poor in general were without provision or help, and Henry proposed granting to the City the Mansion house of St. Bartholomew's, the dissolved house of Grey Friars adjoining, and the unoccupied fabric of St. Thomas's Hospital. The latter was intended by Henry to receive the name of the Hospital of the Holy Trinity, and to be allotted exclusively to lame, wounded, and diseased soldiers. The monastery of Grey Friars was to be for the education and maintenance of fatherless children and those of poor parents. The intentions of Henry were overtaken by death, but not before he had conferred upon the citizens of London the Hospital of St. Bartholomew's and also that of Bethlem for lunatics.

It is from the death of Henry that the connection of St. Thomas's Hospital with the City of London appears to begin. To meet the needs of the sick and destitute who had before depended on the charity of the religious houses, a Committee or Board of Inquiry was instituted by the citizens, with the sanction of King Edward. About 2,100 souls were reported as fit recipients of relief, as fatherless children and invalids, or as "Idle rogues of both sexes who were levying contributions on public sympathy by feigned tales of sorrow." It was proposed to establish receptacles for each class in the unoccupied monastic buildings, and a pecuniary contribution was set on foot to complete the work. They bought the dissolved house of the Franciscans or Grey Friars near St. Bartholomew's Hospital, and also by charter from the King received a grant as follows: "That the said mayor, commonalty, and citizens, and their successors, may have and enjoy all the franchises, immunities, and privileges whatever, which any Archbishop of Canterbury, and which the said Charles late Duke of Suffolk, or any master, brethren, or sisters of the late Hospital of St. Thomas in Southwark aforesaid; or any Abbot of the said monastery of St. Saviour, Saint Mary Bermondsey, next Southwark aforesaid, or any prior and convent of the priory of St. Mary Overie, ever had or enjoyed, or which we hold or enjoy, or our most dear father Henry the VIIIth, late King of England, or had enjoyed,



or ought to have, hold, and enjoy the same: and that none of our heirs or successors may intermeddle with this our grant."

The Greyfriars became Christ's Hospital, and the Southwark site the Hospital of the Holy Trinity or St. Thomas's. The Lord Mayor and certain citizens then met on the 6th of October, 1552, and constituted themselves by royal permission governors of the hospitals, and almoners of the money collected. The Hospital of the Holy Trinity they named, in compliment to Edward, the "King's Hospital," and ordained it to receive 260 "wounded soldiers, blind, maimed, sick, and helpless objects."

They also directed that 380 children should be received into Christ's Hospital.

To complete the scheme, the old palace of Bridewell, in Blackfriars, where the Emperor Charles V. had lodged in 1522, when on a visit to Henry VIII., and where subsequently Wolsey had lived, was granted to the City by Edward as a house of correction for dissolute persons and idle apprentices, and for the temporary maintenance of distressed vagrants.

Lastly, the lands lately belonging to the Palace of the Savoy were conferred jointly on the three foundations; and a month only before the end of Edward's short reign, he incorporated by a second charter bearing date the 6th of June, 1553, the Lord Mayor and commonalty of the City of London in succession as perpetual governors of Saint Bartholomew's, Christ's, Bridewell, and the King's Hospital (which last received the name of ST. THOMAS THE APOSTLE), and secured to them the possession of all the estates and revenues appertaining to them by previous deeds of gift. So were the royal hospitals founded.

In 1557 the laws were framed and printed under the name of "The Order of the Hospitalls of K. Henry the VIII. and K. Edward the VI., viz. St. Bartholomew's, Christ's, Bridewell, St. Thomas's. By the Maior, Cominaltie, and Citizens of London," &c.

Successive bequests and donations continued to augment the property of the charities, but during the reigns of Elizabeth, James I., Charles I., and the Protectorate, there appear few facts to note. In the abstract of the charter of confirmation granted to the City in 1663 by Charles II. on his restoration, we find the charter of Edward acknowledged and confirmed. The Great Fire of London in 1666 injured St. Thomas's in its revenues only; and a fire in Southwark anno 1676, ceased "as if by divine interposition," at the hospital, probably a strong and isolated block of building. Shortly after this, however, it was found necessary to rebuild the fabric, and in 1693 subscriptions were opened for this purpose. A long list of benefactions in this and the succeeding year, amounting in all to £37,769 3s., is given by Golding, who especially singles out Sir Robert Clayton for eulogium. The statue then erected to him, and still extant, was originally dated 1701, but this was altered on his death to 1714. He was the founder of the old square in which it stood, replacing what Golding terms "a low swampy structure of the monastic order." In 1707, Mr. Guy, founder of the neighbouring hospital, erected

three wards at his own charge. In 1717, the back block of buildings adjoining Guy's Hospital was added. With the exception of the two large blocks forming the Borough frontage, the north wing erected in 1833, and the south wing in 1839, the fabric seems to have remained unchanged until its purchase by the railway. In the centre of the front quadrangle stood the brass statue of King Edward, by Scheemakers, erected first in 1737, in pursuance of the will of Charles Joye, some time treasurer of the hospital. It now stands in the grounds of the New Hospital.

It is a matter of more difficulty to trace the early history of the medical school in connection with the hospital. For the facts which follow we are indebted to the late R. G. Whitfield, Esq., who, from the long period during which his family had been associated with this foundation, was perhaps more qualified to speak than any other person.

The earliest mention in the hospital books of an apprentice is on December 31st, 1561. It is not until 1702 that a law is met with precluding pupils or surgeons from dissecting the dead body without permission from the treasurer.

In 1703 the grand committee resolved that no surgeon should have more than three "Cubbs," a term altered in 1758 to that of "Dressers." Besides these there were also apprentices to the surgeons of the hospital, and ordinary pupils. The first mention of lectures occurs soon after the appointment of Wm. Cheselden, in 1718. These he at first gave at his own house, but afterwards by permission in the hospital. They were on anatomy and surgery. In 1723 a regular registry was ordered to be kept by the apothecary, of pupils entering to surgical practice. In 1725, Guy's Hospital was opened for the reception of patients. In 1751 the assistant-physician was allowed to take two pupils for his own benefit. In 1768, an additional surgeon, Mr. Joseph Else, was elected to read lectures to the pupils.

The students of Guy's Hospital had by courtesy been allowed to attend the operations, and a similar favour admitted the St. Thomas's men to those at Guy's. But on the 8th November, 1768, it was formally resolved that the pupils of each hospital have the liberty of attending not only the operations, but surgical practice, and the money to be divided between the six surgeons and two apothecaries. Hence the appellation of the "United Hospital"; an amalgamation never extended beyond the surgical practice.

To Mr. Else is due the foundation of a regular anatomical school. Mr. Cline, who in 1781 was appointed to read lectures conjointly with Mr. Else, was mainly instrumental in bringing it to its greatest celebrity. At Mr. Else's death, Mr. Cline purchased the collection of preparations made by him and Mr. Girle, a former surgeon, which are now in the hospital museum, and became sole lecturer on anatomy. In 1788 he also became surgeon to the hospital. Mr., afterwards Sir Astley, Cooper was apprenticed to Mr. Cline in 1784, and before his election, as one of the surgeons to Guy's Hospital in 1800, was

joint lecturer with his teacher on anatomy and surgery. They both added materially to the pathological museum.

In 1812 Mr. Henry Cline was elected surgeon to St. Thomas's Hospital on his father's resignation, and carried on the anatomical lectures conjointly with Astley Cooper. In 1813 a new anatomical theatre and museum were built, the hospital giving £3000 for the purpose, and the two lecturers £1000 each. In 1815 Mr. Benj. Travers, an apprentice of Astley Cooper's at Guy's, was elected surgeon, according to the established rule which gave the vacancy to the senior apprentice of either institution. Mr. Travers joined in the lectures, devoting his attention specially to ophthalmic surgery. In 1820 Mr. Joseph Henry Green was elected surgeon on the death of his cousin Mr. Hy. Cline, having been apprenticed to his uncle Mr. Cline in the year 1809. From 1820 to 1825 he lectured with Astley Cooper. At this period all the branches of medical study,—viz., medicine, chemistry, *materia medica*, midwifery, botany, and physiology—were lectured on at Guy's Hospital, and no physician of St. Thomas's was allowed to share them.

In 1824 Sir A. Cooper resigned the surgical chair, and Mr. C. Aston Key, his apprentice and nephew by marriage, joined Mr. Green in the office. Mr. Frederick Tyrrell, standing in exactly the same relation to Cooper, received permission to lecture on diseases of the eye. In the following year Cooper showed signs of cerebral disturbance, and the family desired that his nephew, Mr. Bransby Cooper, should be his successor. But the claims of Mr. John Flint South were considered superior, and he was appointed. From this cause the "United Hospitals" were severed, and a complete school set up in both. The majority of the students clung to Guy's, where the prestige of the great Sir Astley was still strong; and St. Thomas's school began to sink. The establishment of the Aldersgate Street private school under Tyrrell and Lawrence materially aided in this declension, as did also the secession of Dr. Elliotson to the newly-established University College, and the foundation of a fresh school at King's College, where for a time the surgical lectures were given by Mr. Joseph Henry Green, although a surgeon of St. Thomas's.

Owing to the unprosperous state of affairs in 1842, the Governors came forward to reorganize the school, and the aid of Mr. R. D. Grainger, whose popularity had been established in the Webb Street private school, was obtained. Mr. Joseph H. Green also rejoined the school; and Dr. Marshall Hall, Dr. Hodgkin, Dr. Martin Barry, Dr. Gregory, and Mr. Benjamin Travers contributed to its efficiency. In 1847 the Governors added to the school a lectureship on general pathology in connection with the hospital practice, and appointed to that lectureship and the associated clinical duties Mr. John Simon, whom afterwards (1853) they made one of the surgeons. In 1855, they added a lectureship on public health, and appointed to it Dr. Headlam Greenhow, who afterwards became physician to the Middlesex Hospital. This state of affairs continued until 1858.



when the Governors gave back the management, and its attendant risks, into the hands of the lecturers.

For some years it was maintained with difficulty, and much self-sacrifice on the part of the staff, during what may be termed a transitional period, in the hope, now realized, of its once more developing into an institution worthy of its old traditionary glories.

From its foundation down to the year 1862, the hospital occupied the original site near London Bridge, but in that year the property was sold for the extension of the railway accommodation, and the establishment temporarily removed to the Surrey Gardens, where it was carried on till the summer of 1871. In 1868 the first stone of the New Hospital at Westminster Bridge was laid by the Queen, and the completed building was opened by her Majesty in 1871. In September the patients were first admitted into the New Hospital, and the Medical School was opened on October the 2nd.

## NIGHTINGALE NURSING SCHOOL.

The Committee of the "NIGHTINGALE FUND" have arrangements with the authorities of St. Thomas's for educating Women in the practice of Hospital Nursing. On the satisfactory completion of one year's training, they will be required to enter into service as Nurses in St. Thomas's or some other Hospital or Infirmary. A limited number of gentlewomen can be admitted under special agreements to this course of training, with a view to qualify themselves for superior appointments, or as District Nurses.

The Regulations as to the admission of Candidates may be obtained by writing to Miss L. M. Gordon, the Matron, St. Thomas's Hospital, London, S.E., to whom also application should be made by Institutions requiring trained Superintendents or Nurses.

Candidates should, whenever it is possible, make personal application to Miss Gordon, at the Matron's Office, at 10.30 a.m., on Tuesday or Friday.

The Nightingale Fund is the proceed of a public subscription raised at the close of the Crimean War, as a tribute to Florence Nightingale, for the services rendered by her in tending the sick and wounded soldiers in the Military Hospitals on the Bosphorus and at Balaklava. It was, by her request, vested in Trustees to enable her to establish an Institution for the training, sustenance, and protection of Nurses and Hospital attendants, and, as invested, produces an income of £1400. The management is in a Council, appointed by her. The School was opened at old St. Thomas's in 1860 with 12 probationers, increased to 33 in the present Hospital. 1100 candidates have been admitted, and 662 trained Nurses have received appointments. A large number are now Matrons or Superintendents of Nurses.

## THE HOSPITAL.

The original Hospital latterly contained 500 beds. The present building contains in all 572 beds. It consists of six blocks appropriated to the reception of patients; with one for the administrative and other offices, and one for the Medical School. The Ward blocks, though connected by corridors, stand apart, so as to afford free exposure in all directions. The Wards, with the exception of four which are placed on the ground floor, occupy the first, second, and third floors. Generally, each Ward affords accommodation for 28 beds, which are placed against the piers between the windows, so as to secure thorough ventilation. In a small Ward annexed to each larger Ward, there are two beds for cases requiring special care or treatment.

The operating theatres are unusually large, and have been lately thoroughly refitted, refloored, and provided with electric lighting. They are now peculiarly well adapted for the carrying out of aseptic surgery.

Of the whole accommodation of the Hospital, about 180 beds are appropriated to ordinary Medical cases, and 230 to ordinary Surgical cases. There are special Wards for the reception of diseases peculiar to women (21 beds); for diseases of the eye (25 beds); for venereal affections (8 beds); and for children under six years of age (30 beds). In one of the blocks, separated from the rest of the establishment, there are Wards for infectious diseases.

The space provided for each bed in the ordinary Wards is upwards of 1,800 cubic feet, and in the block appropriated to infectious diseases, about 2,500 cubic feet.

The Out-patients' Department is extensive and well arranged, and every facility is afforded for the treatment of different forms of Medical and Surgical casualties and diseases.

During the twelve months ending December 31st, 1891, the number of patients admitted into the Hospital amounted to 4,906. In the same period, 18,779 Out-patients have been treated, and in the Maternity department 2,207 women have been attended at their own homes. Casualties, to the number of 72,576 attendances, were treated during the same period.



## THE MEDICAL SCHOOL.

The School buildings stand at the southern extremity of the Hospital, from which they are isolated by a large open quadrangle with terrace overlooking the river. They contain full accommodation for large classes of students.

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### THE MUSEUM OF HUMAN AND COMPARATIVE ANATOMY AND PATHOLOGY.

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*Curator.*—S. G. SHATTOCK, Esq., F.R.C.S.

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The Museum, which is of ample size and well lighted, has two galleries devoted entirely to the display of specimens illustrating Pathology: the different series are each preceded by a normal preparation of the organ to which they refer.

On the ground floor are the collections of Normal Human, and of Comparative Anatomy: there is, moreover, a series of type specimens of Pathology, selected to facilitate the study of this subject.

The Printed Catalogue of the Museum consists of three octavo volumes: in the first volume, edited by Mr. JOHN F. SOUTH, are described the preparations of Normal Human, Microscopical, and Comparative Anatomy; and the 2nd and 3rd volumes, edited by Mr. SYDNEY JONES, contain descriptions of the specimens illustrative of Pathological Anatomy. A Second Edition of the Pathological Catalogue by Mr. SHATTOCK is in course of preparation. The first and second parts of this, including the Injuries and Diseases of the Organs of Motion and Digestion are already published.

THE COLLECTION OF HUMAN ANATOMY contains a large number of dissected Preparations, illustrating the Organs of Locomotion and Sense; the Nervous System; the Digestive, Respiratory, and Urinary Apparatus; the Vascular System and Organs of Reproduction; and, in addition, a series of elaborate dissections.

THE PATHOLOGICAL COLLECTION contains above 3,000 specimens, arranged in series as follows:—Injuries and Diseases of the Organs of Motion; of the Organs of Digestion, of Circulation, of Respiration, of the Nervous System, of the Genito-Urinary System.

Among the earliest contributors to the Museum were Mr. CLINE, Sir A. COOPER, Mr. TRAVERS, and Mr. TYRRELL; and many of the Specimens are of great historical interest: those used by Sir A. Cooper to illustrate his works on Dislocations and Fractures, on Hernia, and on the Testis, are contained amongst them, as well as two preparations showing the result of Ligature of the Abdominal Aorta, one a case of Sir A. Cooper's, another that of Mr. J. F. South's. In the collection, too, are Mr. Travers' preparations illustrating the process of nature in repairing Injuries of the Intestines, and those furnished by his experiments on the ligature of Arteries.

The section of Fractures has been enriched by Sir William MacCormac, who presented numerous specimens of gun-shot injuries, etc., obtained from cases under his care during the Franco-German War (1870); that of Diseases of the Liver, by a large number of Biliary Calculi presented by Dr. Ord.

THE COLLECTION OF COMPARATIVE ANATOMY comprises about 400 dissected Preparations, and in addition an equal number of most carefully prepared osteological specimens. A large number of these dissections were made by Sir A. Cooper, to illustrate his Lectures, when Professor of Comparative Anatomy to the Royal College of Surgeons.

THE CABINETS OF MICROSCOPICAL ANATOMY, which are under the charge of the Demonstrator of Practical Physiology, are available for use by Students who wish to examine them, subject to such regulations as may be deemed necessary.

THE MATERIA MEDICA MUSEUM contains in cases a complete collection of all the chemicals and organic substances included in the British Pharmacopœia; all these are named and numbered. A second collection of all the chief medicinal substances is placed in drawers and is freely accessible to students. A large and very fine collection of dried medicinal plants, named according to the latest nomenclature, is displayed on the walls of the Museum.

The Museum is under the conjoint superintendence of Dr. Hadden and Mr. Shattock.

THE COLLECTION OF CHEMISTRY AND MINERALOGY is under the superintendence of Mr. Dunstan. The larger part of the Specimens contained in it was presented by the late Dr. Bernays. It is displayed with the Collection of Materia Medica.

The Museums are open to Students daily from 9 a.m. till 5 p.m., and every encouragement is given to Students to make use of the well-arranged educational series for the purposes of their studies.

## THE LIBRARY.

The Library, to which students have access with the permission of the Librarian, and which can be used by them as a Reading Room, has been recently completely re-arranged and re-catalogued. It contains a valuable collection of standard works; various periodicals are regularly taken in, and a number of the modern text books are added from time to time for reference.

## LABORATORIES, THEATRES AND CLASS ROOMS.

The Chemical, Physiological, and Anatomical Departments are complete in themselves. They consist of large Laboratories for Classes, Private Laboratories, and each is provided with its own Lecture Room.

A large Laboratory for the accommodation of the Class in Pathological Histology is about to be erected, and will form a valuable complement to the present Pathological Department. In the same building will be the accommodation for the Class in Elementary Biology.

A Bacteriological Laboratory, under the charge of Mr. Shattock, forms a part of the Pathological Department.

A separate Laboratory for the practical teaching of Physics contains the Physical Apparatus.

A special Theatre is devoted to the use of the Lecturers giving the more advanced systematic courses, as Medicine, Surgery, &c. In connection with this Theatre is a large class room for the various tutorial classes.

A building about to be erected will provide new and improved accommodation for the Students' Club.

## CONSULTING STAFF OF THE HOSPITAL.

Physician.	Surgeons.
J. S. BRISTOWE, M.D. Lond., LL.D., F.R.S.	Sir JOHN SIMON, K.C.B., Hon. M.D. Dub., F.R.S., D.C.L. SYDNEY JONES, M.B. Lond. JOHN CROFT.
Obstetric Physician.	Ophthalmic Surgeon.
H. GERVIS, M.D. Lond.	R. LIEBREICH.

## VISITING STAFF.

Physicians.	Surgeons.
W. M. ORD, M.D. Lond. JOHN HARLEY, M.D. Lond. J. F. PAYNE, M.D. Oxon. SEYMOUR J. SHARKEY, M.A., M.D. Oxon.	Sir WILLIAM MACCORMAC, M.A. D.Sc., M.Ch. Hon. Causâ. A. O. MAC KELLAR, M.Ch. H. H. CLUTTON, M.A. Cantab. WILLIAM ANDERSON.
Assistant Physicians.	Assistant Surgeons.
W. B. HADDEN, M.D. Lond. T. D. ACLAND, M.A., M.D. Oxon. H. P. HAWKINS, M.A., M.B. Oxon.	B. PITTS, M.A., M.C. Cantab. G. H. MAKINS. W. H. BATTLE. C. A. BALLANCE, M.S. Lond.

Obstetric Department.	Eye Department.
<i>Physician.</i> —C. J. CULLINGWORTH, M.D. <i>Assistant Physician.</i> —R. CORY, M.A., M.D. Cantab.	<i>Surgeon.</i> —E. NETTLESHIP. <i>Assistant Surgeon.</i> —J. B. LAWFORD.
Throat Department.	Skin Department.
<i>Physician.</i> —F. SEMON, M.D. Berlin.	<i>Surgeon.</i> —WILLIAM ANDERSON.
Ear Department.	Dental Department.
<i>Surgeon.</i> —C. A. BALLANCE, M.S. Lond.	<i>Surgeon.</i> —C. E. TRUMAN, M.A. Cantab.
Resident Assistant Physician.	Resident Assistant Surgeon.
H. G. TURNEY, M.A., M.B. Oxon.	E. C. STABB, F.R.C.S.

## Anæsthetists.

WALTER TYRRELL and E. F. WHITE, F.R.C.S.

## Anæsthetist to the Dental Department.

E. H. G. MORRIS, B.A., M.B. Cantab.

## Electrician.

W. J. KILNER, B.A., M.B. Cantab.

## Pharmaceutist.

EDMUND WHITE, B.Sc. Lond.

## Demonstrators of Morbid Anatomy.

W. B. HADDEN, M.D. Lond.

H. P. HAWKINS, M.A., M.B. Oxon.

## Consulting Chemist.

WYNDHAM R. DUNSTAN, M.A.

## LECTURERS.

A. W. BENNETT, M.A., B.Sc. Lond., F.L.S.	H. RAYNER, M.D.
T. CRANSTOUN CHARLES, M.D.	EDWARD SEATON, M.D.
WYNDHAM R. DUNSTAN, M.A.	S. G. SHATTOCK, F.R.C.S.
	C. S. SHERRINGTON, M.A., M.B. Cantab.

## Medical Registrar.

H. W. G. MACKENZIE, M.A., M.D.  
Cantab.

## Surgical Registrar.

F. C. ABBOTT, M.B., B.S. Lond., F.R.C.S.

## Curator of the Museum.

S. G. SHATTOCK, F.R.C.S.

## Librarian.

G. S. SAUNDERS.

## Dean of the School.

G. H. MAKINS, F.R.C.S.

## Secretary to the School.

GEORGE RENDLE, M.R.C.S.

## LECTURERS AND DEMONSTRATORS.

## LECTURERS.

<i>Chemistry, Chemical Physics, and Practi-</i>	.. .. .	}	Mr. DUNSTAN.
<i>cal Chemistry</i>			
<i>Materia Medica</i>	.. .. .		Dr. HADDEN.
<i>Descriptive Anatomy</i>	.. .. .		Mr. ANDERSON and Mr. MAKINS.
<i>General Anatomy and Physiology</i>	.. .. .		Dr. SHERRINGTON.
<i>Practical Physiology and Histology</i>	.. .. .		Dr. T. CRANSTOUN CHARLES.
<i>Midwifery, and Diseases of Women</i>	.. .. .		Dr. CULLINGWORTH.
<i>Practical and Manipulative Surgery</i>	.. .. .	{	Mr. MACKELLAR, Mr. PITTS, and Mr. BALLANCE.
<i>Medicine</i>	.. .. .		
<i>Surgery</i>	.. .. .	{	Sir WILLIAM MACCORMAC and Mr. CLUTTON.
<i>Pathological Anatomy</i>	.. .. .		
<i>Forensic Medicine and Toxicology</i>	.. .. .		Dr. CORY and Mr. MACKELLAR.
<i>Therapeutics</i>	.. .. .		Dr. HADDEN.
<i>Diseases of the Eye</i>	.. .. .		Mr. NETTLESHIP and Mr. LAWFORD.
<i>Mental Disease</i>	.. .. .		Dr. RAYNER.
<i>Public Health and Sanitary Science</i>	.. .. .		Dr. SEATON.
<i>Clinical Medicine</i>	.. .. .		The PHYSICIANS.
„ „ <i>Obstetric</i>	.. .. .		Dr. CULLINGWORTH.
„ <i>Surgery</i>	.. .. .		The SURGEONS.
<i>Physics</i>	.. .. .		Mr. DUNSTAN and Dr. INCE.
<i>Botany</i>	.. .. .		Mr. A. W. BENNETT.
<i>Comparative Anatomy and Zoology</i>	.. .. .		Mr. PARSONS.

## TEACHERS AND DEMONSTRATORS.

<i>Physics and Chemistry</i>	.. .. .		The DEMONSTRATOR.
<i>Elementary Biology</i>	.. .. .		Mr. PARSONS.
<i>Practical Anatomy</i>	.. .. .	{	The LECTURERS, with Mr. PARSONS, Mr. ABBOTT, and Mr. ROBINSON.
<i>Physiology and Practical Physiology</i>	.. .. .		
<i>Practical Medicine</i>	.. .. .		Dr. ACLAND and Dr. HAWKINS.
<i>Practical and Manipulative Surgery</i>	.. .. .	{	Mr. MACKELLAR, Mr. PITTS, and Mr. BALLANCE.
<i>Practical Obstetrics</i>	.. .. .		
<i>Morbid Anatomy</i>	.. .. .		Dr. HADDEN and Dr. HAWKINS.
<i>Morbid Histology</i>	.. .. .		Dr. HAWKINS.
<i>Diseases of the Throat</i>	.. .. .		Dr. SEMON.
„ „ <i>Skin</i>	.. .. .		Mr. ANDERSON.
„ „ <i>Ear</i>	.. .. .		Mr. BALLANCE.
„ „ <i>Teeth</i>	.. .. .		Mr. TRUMAN.



## SUGGESTIONS TO STUDENTS ABOUT TO ENTER THE MEDICAL PROFESSION.

Registration.\*

The commencement of Medical Study cannot be registered at the Office of the General Medical Council until the Student has passed a Preliminary Examination in the subjects of General Education as specified in the following list:

Preliminary Examinations.

(1) English Language; (2) Latin; (3) Arithmetic, Algebra, and Euclid; (4) Either Greek, Logic, or any Modern Language.

A Student who has not passed such an examination is recommended to pass either the Matriculation of the University of London, the Examination in Arts of the Apothecaries' Society of London, or the Professional Preliminary Examination of the College of Preceptors. The regulations respecting these may be obtained from the Registrar, University of London, Burlington Gardens, W., the Secretary, Apothecaries' Hall, Blackfriars, E.C., and the Secretary, College of Preceptors, Bloomsbury Square, W.C.

Certificates of Graduation, Matriculation, and the Local Examinations of British and Colonial Universities are accepted by the General Medical Council provided that the above-mentioned subjects be shown to have been included.

London University.

Students who propose to obtain Medical Degrees in the University of London must pass both the Matriculation and the Preliminary Scientific Examinations before commencing their regular Medical Studies.

For the Preliminary Scientific Examination and the Intermediate Examination in Medicine special classes are held during the Winter and Summer Sessions (see p. 38).

**For a Student who enters in October**, intending to obtain the double qualification of the "Conjoint Board" (L.R.C.P. Lond. and M.R.C.S. Eng.) the following course of study is recommended. (For days and hours of Lectures, &c., see Time Table, p. 28.)

All Students are required to apply to the Medical Secretary for cards of admission to the Lectures, &c., of each Session.

### First Winter Session.

Lectures, &c.  
Examinations.

Anatomy, Elementary Biology, Elementary Physiology, Chemistry, and Physics. Anatomical and Physiological Demonstrations. Dissections.

"Sessional" at Medical School in December and in March. Part III. (Elementary Biology) of First Examination of the "Conjoint Board" in January, and Part IV. (Elementary Anatomy) in March.

### First Summer Session.

Lectures, &c.  
Examinations.

Materia Medica, Practical Chemistry and Practical Physiology; Instruction in Practical Pharmacy may be obtained from the Hospital Pharmaceutist. (Fee, three guineas for three months, p. 37.)

"Sessional" in July, and Parts I. (Chemistry and Physics) and II. † of the "First Conjoint."

### Second Winter Session.

Lectures, &c.  
Examinations.

Anatomy and Physiology with Demonstrations and Dissections. Practical Physiology. Tutorial Class in Anatomy.

"Sessional" in December and in March; "Tests," and "Second Conjoint" (Anatomy and Physiology) in March.

N.B.—The "Third Conjoint" cannot be taken until two years after the second examination has been passed; hence the importance of passing the second at this stage.

\* The Regulations of the General Medical Council with regard to Registration may be obtained from the Registrar, 299, Oxford Street, London, W.

† Part II. (Practical Pharmacy) may be deferred and taken as part of the "Third Conjoint."



**Second Summer Session.**

Hospital Practice, Medical and Surgical.

Midwifery, Practical Obstetrics, Practical Surgery.

"Sessional" in July.

Lectures.  
Examina-  
tions.

The course of instruction in Practical Medicine must be attended by Candidates for Out-Patient Clinical Clerkships.

**Third Winter Session.**

Hospital Practice, Medical and Surgical.

Medicine, Surgery, and Surgical Pathology, Practical Surgery, Practical Course of Pathological Anatomy.

Lectures.

"Sessional" in December and March.

Examina-  
tions.

Clinical Clerkship (if not held during July, August, and September), and Dressership, in the Out-Patient Departments.

Maternity Cases may be attended at any time after the Lectures on Midwifery and a course of Practical Obstetrics by Students who have passed the "Second Conjoint."

**Third Summer Session.**

Hospital Practice, Medical and Surgical, with Clerkship or Dressership.

Pathological Anatomy, Forensic Medicine, Mental Disease, Therapeutics, and Public Health.

Lectures.

"Sessional" in July.

Examina-  
tions.

**Fourth Winter Session.**

Hospital Practice, Medical, Surgical, the Special Departments, and Post-mortem Examinations. Clerk or Dress in special Departments and Post-mortem Room. Instruction in Vaccination. (Fee, one guinea, p. 37.)

Practical Course of Pathological Anatomy (if not taken in third winter), Clinical Lectures on Medicine, Surgery, and Diseases of Women; Obstetric Demonstrations; Diseases of the Eye.

Lectures.

**Fourth Summer Session.**

Hospital Practice, Medical and Surgical, and Special Departments.

Clinical Medicine, Clinical Surgery. Tutorial Classes in Surgery, including operations upon the Dead Subject.

Lectures.

"Third Conjoint" in Medicine, Surgery, or Midwifery.

NOTE.—The three subjects *may* be taken at one examination.

Examina-  
tions.

Candidates for the Third Examination for the Diploma in Medicine and Surgery of the "Conjoint Board" are required to produce a certificate of attendance on not less than twenty labours. Students who have passed the "Second Conjoint," and have attended Lectures on Midwifery, and a Course of Practical Obstetrics, may enter their names for the Rota of Obstetric Clerks.

No Student is admitted to any part of the Third Examination of the "Conjoint Board" until at least two years after passing the Second Examination, and the latter cannot be taken until the end of the Second Winter Session.

Advanced Students are strongly advised to avail themselves of the opportunities afforded for Clinical Study of Fevers at the Hospitals of the Metropolitan Asylums Board, and of Mental Diseases at Bethlem Hospital in their fifth year.

**Fifth Year.**

Hospital Practice, Medical and Surgical, and the Special Departments.

Attendance at a Fever Hospital and Clinical Demonstration at a recognised Lunatic Asylum.

NOTE.—The attendance (except that at a Fever Hospital) required in the Fifth Year must be subsequent to passing the Third Examination.

The "Final Conjoint" in Clinical Medicine and Clinical Surgery, and in Midwifery if not taken at the Third Examination.

Examina-  
tions.

The Final Examination cannot be taken until twelve months after the Third.

### Preliminary Summer Session.

If a Student enters in May, intending to obtain the qualification of the Conjoint Board, he is advised to pursue the following course of study:—

**Lectures.** Elementary Biology, Lectures and Classes in Chemistry and in Materia Medica.—Instruction in Practical Pharmacy may be obtained from the Hospital Pharmaceutist. (Fee, three guineas for three months, p. 37.)

**Examinations.** Botany (if required for a higher examination).

Part I. (Elementary Biology.) Part II. (Practical Pharmacy) of "First Conjoint" in July or October.

**NOTE.**—Students who join a Medical School in May have the advantage of an additional three months to devote to the preparation for the four parts of the First Examination of the "Conjoint Board."

All Students are required by the Governors to conform to the Regulations of the Hospital and Medical School, and the School Committee is empowered, with the approval of the Treasurer, to suspend or remove a Student at any time for adequate reason. (See also p. 36.)

As but few Lectures need be attended in the fourth and fifth years, the greater part of that time can, and should, be given to the practical study of disease in the Wards, Out-Patient Departments, and Post-Mortem Room.

Students intending to prepare for University Degrees and other higher Examinations should apply to the Medical Secretary for the Regulations relating thereto. (For Special Classes for these Examinations see p. 38.)

Students when qualified should use every effort to obtain one or more of the senior appointments open to them, especially those of House Physician, House Surgeon, and Obstetric House Physician. These and other appointments, of which details are given at p. 31, afford opportunities for obtaining practical professional knowledge which cannot be estimated too highly. No payment is required for any of them.

**N.B.**—The Regulations for the Sessional Examinations and Prizes will be found on pp. 32-33.

The Regulations of the various Examining Boards in London and Synopses of the subjects of Examination may be obtained on application to—

**THE REGISTRAR,**

University of London,

Burlington Gardens, W.

**THE SECRETARY,**

Examination Hall,

Victoria Embankment, W.C.

**THE SECRETARY,**

Society of Apothecaries,

Blackfriars, E.C.

## HOSPITAL PRACTICE.

### CLINICAL TEACHING OF MEDICINE AND SURGERY.

Clinical instruction is given daily by the Physicians and Surgeons during their visits to the Wards, and by the Assistant Physicians and Assistant Surgeons in the Out-Patient Departments (Time Table, p. 22). Lectures on Clinical Medicine and Surgery are given in the afternoon every week throughout the academical year by one or more of the Physicians and Surgeons.

**Diseases of Women.**—Clinical instruction is given in Adelaide Ward on Tuesdays and Fridays at 2 p.m., and in the Out-Patient room on Wednesdays and Saturdays at 1.30 p.m.

**Diseases of Children.**—Instruction is given by Dr. CORY, in the Out-Patient room, on Saturdays at 1.30.

**Midwifery.**—A maternity department is connected with the hospital, women being attended in confinement at their own homes by students of the hospital, under the supervision of the Assistant Obstetric Physician (p. 32). Students are accompanied to their first cases by one of the Obstetric House Physicians.

**Diseases of the Eye.**—Clinical teaching in the Out-Patient rooms daily except Saturday. Clinical Lectures or Ophthalmoscopic Demonstrations weekly.

### SPECIAL DAYS AND HOURS FOR SURGICAL OPERATIONS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Surgical Operations .....	—	—	1.30	—	—	1.30
Gynæcological „ .....	—	—	—	2.0	—	—
Ophthalmic „ .....	2.30	—	—	—	2.0	—

**Diseases of the Skin.**—Clinical instruction by Mr. ANDERSON on Fridays.

**Diseases of the Throat.**—Clinical instruction by Dr. SEMON on Tuesdays and Fridays. During the Winter Session Dr. SEMON gives a short course of Clinical Lectures to senior students.

**Diseases of the Ear.**—Clinical instruction by Mr. BALLANCE on Mondays. During the Winter Session Mr. BALLANCE gives a short course of Lectures to senior students.

**Diseases of the Teeth.**—Mr. TRUMAN and Assistant give instruction in Dental Surgery on Tuesdays and Fridays.

**Vaccination** is taught practically by Dr. CORY, who is authorised by the Local Government Board to give certificates of proficiency in Vaccination at St. Thomas's Hospital. Fee, One Guinea (see p. 37).

The Administration of **Anæsthetics** is taught practically by Mr. TYRRELL and Mr. WHITE.

### POST-MORTEM EXAMINATIONS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. HADDEN .....	2.0	—	2.0	—	—	2.0
Dr. HAWKINS .....	—	2.0	—	2.0	2.0	—

TIMES OF ATTENDANCE OF THE PHYSICIANS AND SURGEONS  
IN THE WARDS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. ORD .....	2	—	—	2	—	—
Dr. HARLEY .....	—	2	—	—	2	—
Dr. PAYNE .....	2	—	—	2	—	—
Dr. SHARKEY .....	—	2	—	—	2	—
Dr. CULLINGWORTH .....	—	2	—	—	2	—
SIR WILLIAM MAC CORMAC ..	—	2	—	—	2	—
Mr. MAC KELLAR .....	2	—	—	2	—	—
Mr. CLUTTON .....	—	2	—	—	2	—
Mr. ANDERSON .....	2	—	—	2	—	—
Mr. NETTLESHIP .....	—	2	—	—	—	—

TIMES OF ATTENDANCE OF THE ASSISTANT-PHYSICIANS AND  
ASSISTANT-SURGEONS ON THE OUT-PATIENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. HADDEN .....	—	1.30	—	—	1.30	—
Dr. ACLAND .....	1.30	—	—	1.30	—	—
Dr. HAWKINS .....	—	—	1.30	—	—	1.30
Dr. CORY (Women and Children)..	—	—	1.30	—	—	1.30
Mr. PITTS .....	—	1.30	—	—	—	—
Mr. MAKINS .....	1.30	—	—	1.30	—	—
Mr. BATTLE .....	—	—	1.30	—	—	1.30
Mr. BALLANCE .....	—	—	—	—	1.30	—

TIMES OF ATTENDANCE IN THE OUT-PATIENT SPECIAL  
DEPARTMENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Mr. NETTLESHIP } (Diseases of the {	—	1.30	—	—	1.30	—
Mr. LAWFORD } Eye) {	1.30	—	1.30	1.30	—	—
Dr. SEMON (Diseases of Throat) ..	—	1.30	—	—	1.30	—
Mr. ANDERSON (Diseases of Skin)	—	—	—	—	1.30	—
Mr. BALLANCE (Diseases of Ear)	1.30	—	—	—	—	—
Mr. TRUMAN (Diseases of Teeth)	—	10	—	—	10	—
Dr. CORY (Vaccination) .....	—	—	11.30	—	—	—



## LECTURES, CLASSES, AND DEMONSTRATIONS.

*A complete list of Lecturers and Demonstrators, p. 17.*

*Time-table of days and hours of Lectures, &c., p. 28.*

*Fees for separate and Special Courses, p. 37.*

*Sessional Examinations, p. 32.*

### ELEMENTARY BIOLOGY.

MR. BENNETT, B.Sc., AND MR. PARSONS.

A three months' practical course to meet the requirements of the "Conjoint Board" is held twice yearly. (May, June, July; October, November, December.)

*Special classes*, for the Preliminary Scientific, are commenced in October for the July examination of the London University. (Fee, see p. 38.)

### BOTANY.

MR. BENNETT, B.Sc.

A course of lectures on Systematic Botany is given during the Summer Session. It comprises the general principles of the classification of plants, with demonstrations of the characters of all the more important natural orders, especially those of medicinal value. The lectures are illustrated by diagrams and fresh specimens. (Fee, see p. 37.)

*Special classes* for the London University and other examinations commence in October. (Fee, see p. 38.)

### COMPARATIVE ANATOMY.

MR. PARSONS.

A course of six lectures, especially intended for the primary examination for the Fellowship of the College of Surgeons, is given twice yearly. (Fee, see p. 37.)

### CHEMISTRY AND CHEMICAL PHYSICS.

MR. DUNSTAN.

LECTURES on Chemistry and Chemical Physics are given three times weekly during the Winter Session. These lectures are fully illustrated by experiments.

A course of Practical Work is conducted during the Summer Session.

These courses include the subject-matter of the various Examining Boards, and are specially arranged to afford the student an insight into the principles of chemical science and their application in Medicine.

A course of Chemical Demonstrations is given in connection with the Lectures on Toxicology and Forensic Medicine.

*Special classes* are held for students preparing for the Preliminary Scientific and Intermediate M.B. Examinations of the University of London, and for the Examinations of other Universities. (Fee, see p. 38.)

*A special course* of Practical Instruction is given in the Laboratory to Candidates for Diplomas in Public Health. (Fee, see p. 37.)

Facilities are offered to advanced students of Chemistry who may wish to undertake original investigation.

### ANATOMY.

MR. ANDERSON AND MR. MAKINS.

(a) **ELEMENTARY.**—A six months' course, consisting of two lectures and one oral examination weekly, is given for first-year students, dealing with osteology and attachments of muscles and ligaments.

(b) **ADVANCED.**—A six months' course, consisting of three lectures and one oral examination weekly, is given for second-year or more advanced students.

The lectures are illustrated by fresh dissections and preparations.

Classes, conducted partly by examination, partly by demonstration, are held during the latter half of the Winter Session, and deal with those sections of anatomy which cannot be included in the lecture course.



(c) **PRACTICAL.**—During both winter and summer sessions the dissecting room is open for the use of students, and the demonstrators attend daily. A number of stock preparations are displayed in the room, and the others are preserved for use in the tutorial classes.

Tutorial classes are held prior to the January, March and July examinations of the "Conjoint Board," which all candidates are allowed to attend. A verbal test examination is held three weeks prior to the examinations, at which candidates must satisfy the teachers as to their knowledge before obtaining the necessary signatures to their schedules.

*Special classes* in advanced anatomy are conducted by the lecturers and demonstrators for the various University and the Fellowship of the College of Surgeons examinations. (Fee, see pp. 37, 38.)

## PHYSIOLOGY.

DR. SHERRINGTON.

A systematic course of lectures to meet the requirements of the "Conjoint Board" is given throughout the Winter Session. As certain portions of the subject are dealt with more fully in some years than in others, students are recommended to attend the course both in the first and second years.

The lectures are supplemented by practical instruction, chiefly in Chemistry and Histology. This course is intended for students of the second year, and others preparing for the second "Conjoint" examination.

A course of practical instruction is also given to students of the first year, in the second half of their first Winter Session.

Tutorial classes in Physiology are held by the Demonstrator prior to the January, March and July examinations of the "Conjoint Board."

A *special class* in advanced Physiology is provided for those preparing for University examinations (Cambridge, London, Oxford), or for the Fellowship of the College of Surgeons. This class, taken by the Lecturer twice weekly from January to July, includes exercise in the use of physiological apparatus and advanced practical instruction in histological and chemical methods. (Fee, see pp. 37, 38.)

Each member of the second Winter class, and of the advanced class, has a table, cupboard, and drawers provided for him. He is required to deposit 5s. for the key to same, the money being returned at the end of the course.

Each member of any practical course must provide himself with a microscope, dissecting instruments, object-slides, cover-glasses, labels, and a small sketch-book. Chemicals, staining and mounting fluids, etc., are provided for him.

## PRACTICAL PHYSIOLOGY (SUMMER COURSE).

DR. T. CRANSTOUN CHARLES.

(1.) **HISTOLOGY.**—All the tissues and organs of the body are prepared after the best methods, and examined. Numerous microscopical slides are mounted by each student, particular attention being given to the methods by which they are prepared.

(2.) **PHYSIOLOGICAL CHEMISTRY.**—Practical instruction is given in the chief constituents of the body, food and its digestion, the different excreta, and also the best methods for their examination.

A senior class open to all students is held for the preparation and examination of the higher animal tissues, the examination of secretions and excretions, section-cutting, injection, volumetric analysis, etc.

## MATERIA MEDICA, PHARMACY, AND THERAPEUTICS.

DR. HADDEN.

Lectures on Materia Medica are given twice a week during the Summer Session, the course being specially adapted to the requirements of candidates for the examination of the "Conjoint Board."

Tutorial classes are held in the Materia Medica Museum by the Lecturer and two assistants.

**PHARMACY.**—Instruction is given by the Hospital Pharmaceutist, Mr. E. White, B.Sc., to students requiring it. (Fee, see p. 37.)

*Special classes* are arranged to meet the requirements of—(a) the “Conjoint Board,” (b) the intermediate M.B. of the University of London, (c) the first M.B. of Oxford and second of Cambridge.

**THERAPEUTICS.**—This course embraces the physiological actions of the various medicinal agents on the healthy body, and on general morbid conditions. One lecture is given weekly during the Summer Session.

## MIDWIFERY AND DISEASES OF WOMEN.

DR. CULLINGWORTH.

A systematic course of lectures on Midwifery is delivered during the Summer Session, embracing the Physiology and Pathology of pregnancy, labour, and the puerperal state, preceded by an account of the anatomy and development of the female pelvis, and of the placenta and foetal membranes.

A short course of Obstetric demonstrations on the model is given by Dr. Cory during the Winter Session. It embraces the comparative relations of the head to the normal, and various contracted pelves; the use of the forceps, turning, craniotomy, etc.

A course of about twenty lectures on the Diseases of Women is delivered during the Winter Session. The lectures are partly systematic, partly clinical, the subjects varying from year to year, and are supplemented by practical teaching at the bedside and in the out-patients’ room.

A class will be held by the Obstetric tutor for practical instruction in the mechanism and management of labour and the use of instruments. No student is allowed to attend maternity cases until he has attended this class.

## MEDICINE.

DR. ORD AND DR. PAYNE.

A systematic course of lectures on the Principles and Practice of Medicine is given three times weekly during the Winter Session.

Clinical lectures on Medicine are given once weekly throughout the Academic year, by the physicians to the Hospital in rotation. The subject of each is advertised beforehand in the Hospital and Medical School.

## PRACTICAL MEDICINE.

DR. ACLAND AND DR. HAWKINS.

An elementary course of practical instruction in the means of physical diagnosis is held for about a month prior to each quarterly appointment of out-patient clinical clerks; no student can be appointed until he has attended this class, or an equivalent course elsewhere. Instruction is given in the principles and method of examination of the circulatory, respiratory, urinary, digestive, and nervous systems. Opportunity is given for the acquirement of skill in auscultation and percussion, and demonstrations are given on cases illustrative of the diseases of the various organs.

## SURGERY.

SIR WILLIAM MAC CORMAC AND MR. CLUTTON.

A systematic course of lectures on General and Special Surgery is given three times weekly throughout the Winter Session. The subject, being too extensive for a six months’ course, is completed in two Winter Sessions.

Clinical lectures on Surgery are given once weekly throughout the Academic year, by the surgeons to the Hospital in rotation. The subject chosen for each lecture is advertised beforehand in the Hospital and Medical School.

## PRACTICAL SURGERY.

MR. MACKELLAR, MR. PITTS, AND MR. BALLANCE.

During the Summer Session Mr. Ballance holds a class once a week, providing special instruction for students about to apply for Out-patient Dresserships. It comprises bandaging, the treatment of wounds, the use of certain instruments and splints, and the demonstration of surgical landmarks on the living model. No student can be appointed a dresser until he has attended this class.

The Winter Course includes the diagnosis and treatment of fractures and dislocations, application of trusses and tourniquets, minor operations, treatment of hæmorrhage and surgical emergencies, and the completion of the Summer Course on instruments and applied anatomy.

The teachers of practical surgery are assisted by Demonstrators, who supervise the students after each lecture in the various manipulations on the living models provided.

Tutorial classes are held for six weeks prior to the January, April, and July examinations of the "Conjoint Board," upon which attendance is voluntary. These include general surgery, operative surgery, and surgical anatomy, by the teachers of Practical Surgery; surgical pathology, by Mr. Shattock; and clinical surgery, in the Wards of the Hospital, by the Resident Assistant-Surgeon.

## OPERATIVE SURGERY.

Classes are held by Mr. MacKellar previous to the January, April, and July examinations of the "Conjoint Board." The operations are performed by the students, subjects being provided at the expense of the school.

*Special classes* are held during the Summer Session and at other convenient times by Mr. Pitts and Mr. Ballance, for students preparing for the higher examinations. The number of students to each subject is limited to two. (Fee, see p. 37.)

## PATHOLOGY AND PATHOLOGICAL ANATOMY.

DR. SHARKEY, DR. HADDEN, AND MR. SHATTOCK.

A lecture on General Pathological Anatomy and the special diseases of organs is given by Dr. Hadden once a week during the Winter Session. Each lecture is followed by a demonstration, in which the main points are illustrated by microscopical and museum preparations. Sections for microscopical examination are given to each student for preparation and mounting.

During the Winter, also, weekly Lectures and Demonstrations are given by Mr. Shattock on Surgical Pathology and Bacteriology. These lectures especially deal with the pathological questions touched upon in the systematic course of surgery.

During the Summer Session two lectures are given weekly by Dr. Sharkey, followed by demonstrations. They deal with the diseases of those organs which have not been treated of in the winter course.

It is intended that, so far as possible, the subject of Pathology should be covered during the Winter and Summer Sessions of each year.

The Demonstrator of Morbid Histology holds occasional classes, in which the microscopical preparations contained in the pathological cabinet are shown and explained.

Three students are selected annually to assist the Demonstrator of Morbid Histology.

Post-mortem examinations are performed daily at 2 p.m. by Dr. Hadden or Dr. Hawkins, and demonstrations given. Students are appointed to act as clerks, and are required to make examinations under the supervision of the demonstrators.

## FORENSIC MEDICINE AND TOXICOLOGY.

DR. CORY AND MR. MACKELLAR.

A three months' course of lectures is given during the Summer Session.

The Medical Section is taken by Dr. Cory.

The Surgical Section and Toxicology by Mr. MacKellar.



The lectures cover the synopses of the various Examining Boards, and are supplemented in the toxicological section by demonstrations by the Lecturer on Chemistry. (See p. 23).

### MENTAL DISEASES.

DR. RAYNER.

A three months' course of lectures is given during the Summer Session, comprising Symptomatology, Causation, States and Forms of Disease.

1. Mental Defects—Idiocy, Imbecility, etc
2. Mental disorders—(a) States of Mental Depression, Melancholia, etc.; (b) States of Mental Exaltation, Mania, etc.; (c) States of Stupor; (d) States of Chronic Disorder and Dementia.
3. Mental disorder in relation to diseases—Causes, etc.
  - (a) General Paralysis, Epilepsy, and other Neuroses.
  - (b) Insanities of puberty, adolescence, pregnancy, parturition and lactation, climacteric and senile insanities.
  - (c) Insanities from injury, heat-stroke, fevers, etc.
  - (d) Insanities from alcohol, lead, and other toxic agencies.
  - (e) Insanity from Gout, Phthisis, and associated bodily diseases.
4. General Pathology.

Clinical Instruction is given by visits to Bethlem Hospital and other institutions for the Insane and Imbecile.

### DISEASES OF THE EYE.

MR. NETTLESHIP AND MR. LAWFORD.

A course of about thirty lectures on the principal disorders and diseases of the Eye and its appendages is given during the Winter Session. Patients are frequently shown, or illustrative cases described.

An elementary class for learning the use of the Ophthalmoscope is held in October, January, and May. Occasional evening demonstrations are also given.

Oral classes and demonstrations are held in connection with the Surgical tutorial classes for the examinations of the "Conjoint Board."

A *Special Course* of operations on the dead subject is given by Mr. Lawford. (Fee, see p. 37.)

### PUBLIC HEALTH.

DR. SEATON.

A course of lectures is given during the Summer Session, including:—

Statistics in relation to public health. Statutes relating to public health. Duties of sanitary authorities and their officers. House inspection, sanitary defects in houses injurious to health. Water supply, sources, distribution, and analysis. Infectious diseases, quarantine, isolation, hospitals temporary or permanent. Compulsory notification of infectious diseases, means of preventing spread of infectious diseases by schools. Vaccination and the prevention of small-pox. Meteorology in relation to epidemic diseases. Parasitic and other diseases of animals which may affect the health of man. Epidemics of illness traceable to milk and other foods. Construction and ventilation of sewers, methods of sewage disposal.

The lectures are supplemented by demonstrations at the Parkes Museum and elsewhere.

*Special Classes.*—A six months' course of laboratory instruction for the various diplomas in public health is given by Dr. Seaton, Mr. Shattock, and Mr. Dunstan. (Fee, see p. 37.)

A shorter course of one or two months for students who do not need the above is also given. (Fee, see p. 37.)

# DAYS AND HOURS OF LECTURES AND DEMONSTRATIONS. WINTER SESSION.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years of Attendance.
Elementary Biology .. Oct., Nov., Dec.	—	12	—	—	12	—	1st Year.
Chemistry and Physics .. . . . . .	11.30	—	—	—	10.30	10.30	do.
Descriptive and Surgical Anatomy .. {	11	9.30	—	9.30	—	9.30	do.
	—	11	—	11	—	11	2nd Year.
Anatomical Demonstrations .. . . .	10½-4½	10½-4½	10½-4½	10½-4½	10½-4½	10½-1	1st & 2nd.
Physiology .. . . . . .	9.30	—	9.30	—	9.30	—	2nd Year.
Physiological } Jan., Feb., Mar.,	10.30	12	—	—	12	—	1st Year.
Demonstrations } Oct. to Mar.	12	—	—	12	10.30	—	2nd Year.
Practical and Manipulative Surgery	—	9	—	—	—	—	3rd Year.
Comparative Anatomy (six lectures)	—	—	11	—	—	—	3rd Year.
Medicine .. . . . { Oct., Nov., Dec.	4	—	—	4	4	—	do.
	9	—	—	9	9	—	
Surgery .. . . . { Oct., Nov., Dec.	9	—	—	9	9	—	do.
	—	—	9	4	—	9	
Surgical Pathology .. . . . . .	—	—	12	—	—	—	do.
Diseases of Women .. . . . . .	—	4	—	—	—	—	3rd or 4th.
Pathological Anatomy (Practical) ..	—	—	—	—	—	11½-1½	do.
Diseases of the Eye {Oct., Nov., Dec.	5	—	—	5	—	—	do.
	5	—	—	—	—	—	do.
Obstetric Demonstrations (six) .. . .	—	—	4	—	—	—	do.

## SUMMER SESSION.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years.
Botany .. . . . . .	—	10	10	—	—	—	1st Year.
Elementary Biology .. . . . . .	10	—	—	—	10	—	do.
Materia Medica .. . . . . .	—	—	—	2	—	11.30	do.
Practical Chemistry .. . . . . .	11-1	—	—	—	11-1	9-11	do.
Practical Physiology .. . . . . .	—	2	2	—	2	—	do.
Do. Advanced Voluntary Class	—	—	4.30	2	—	—	—
Anatomical Demonstrations .. . . .	11-4	11-4	11-4	11-4	11-4	11-1	2nd Year.
Midwifery .. . . . . .	—	9	9	9	9	—	do.
Comparative Anatomy (six lectures)	—	12	—	—	—	—	do.
Practical and Manipulative Surgery	—	—	—	—	—	9	do.
Pathological Anatomy .. . . . . .	—	—	12.30	12.30	—	—	3rd Year.
Do. Demonstration .. . . . . .	4.30	—	—	—	—	—	do.
Forensic Medicine .. . . . . .	—	4	—	4	—	9	do.
Mental Diseases .. . . . . .	—	—	—	—	12	—	3rd or 4th.
Public Health and Sanitary Science	12	—	—	—	—	—	do.
Pharmacology and Therapeutics ....	—	12	—	—	—	—	do.
Diseases of the Eye .. . . . . .	5	—	—	9	—	—	do.

*The times of delivery of the Clinical Lectures are arranged, in accordance with other work, in the course of the Session.*



## SCHOLARSHIPS, PRIZES, APPOINTMENTS, AND HONORARY DISTINCTIONS.

### OPEN SCHOLARSHIPS IN NATURAL SCIENCE.

As an inducement to the study of Natural Science before the commencement of the strictly Medical Course, two Scholarships, of the value of £150 (*i.e.*, a free admission) and £60 respectively, are awarded annually, after an examination in Physics, Chemistry, and either Botany, Zoology or Physiology, at the option of Candidates. The standard, so far as the subjects are the same, will be that of the Preliminary Scientific Examination for Honours of the University of London.

These Scholarships are open to all Students who have passed a recognised Preliminary Examination in Arts, and have not yet attended Lectures on Anatomy of the first year, without any condition as to their becoming Students of the Hospital, except in the case of successful Candidates, who must enter at once as "Perpetual" Pupils. Chemistry and Physics are compulsory subjects for this Examination, and Candidates must take up one of the other subjects. The Examination will be conducted by means of written papers and practical work, and will be held on the 28th, 29th, and 30th of September, 1892. Competitors are required to send in their names with choice of optional subject and Certificate of Preliminary Examination to the Medical Secretary not later than September 17th.

### THE WILLIAM TITE SCHOLARSHIP.

This Scholarship, founded by the late Sir W. TITE, C.B., M.P., F.R.S., is endowed with £1,000 Consols, the Interest on which, about £27 10s., is awarded each year to the Student placed highest in the 1st Class List in the examinations at the end of the first Winter Session. Preference, in case of equality between Students, is to be given to the son of a medical man, and more particularly of one who has been educated at St. Thomas's Hospital or is in Practice in Bath.

### THE MUSGROVE SCHOLARSHIP.

This Scholarship, founded by Sir JOHN MUSGROVE, Bart., the late President of the Hospital, is endowed with £1,400 Consols, the Interest on which, about £38 10s., is awarded biennially to the Student who shall take the highest place in the 1st Class List in the examinations at the end of the Second Winter Session. It is tenable for two years, provided the holder obtains a place in the 1st Class in the Examinations at the end of the third winter.

### THE PEACOCK SCHOLARSHIP.

This Scholarship, founded by the will of the late Dr. THOMAS BEVILL PEACOCK, for many years Physician, and at the time of his death Consulting Physician to St. Thomas's Hospital, is of the same value as the Musgrove Scholarship; is awarded and held upon the same terms; and is given every second year in alternation with that Scholarship.

### THE BEANEY SCHOLARSHIP.

This Scholarship, founded by the will of the late Dr. BEANEY, of the value of £52 10s., is awarded biennially, after an examination in Surgery and Surgical Pathology, to a student who shall have completed his fourth, but not his sixth year. The examination is held during the Summer Session.

## PRIZES.

The following Scholarships, Prizes, and Medals, will be offered for Competition during the year 1892-1893:—

TWO OPEN SCHOLARSHIPS IN NATURAL SCIENCE of the value of £150 and £60 respectively, at Entrance.

### AT THE END OF FIRST YEAR.

#### *Winter.*

1st.	..	The William Tite Scholarship	..	..	..	£27 10s.
2nd.	..	College Prize	..	..	..	£20.
3rd.	..	Ditto	..	..	..	£10.

#### *Summer.*

1st.	..	College Prize	..	..	..	£15.
2nd.	..	Ditto	..	..	..	£10.

### SECOND YEAR.

#### *Winter.*

1st.	..	The Musgrove Scholarship	..	..	..	£38 10s.
2nd.	..	College Prize	..	..	..	£20.
3rd.	..	Ditto	..	..	..	£10.

#### *Summer.*

1st.	..	College Prize	..	..	..	£15.
2nd.	..	Ditto	..	..	..	£10.

### THIRD YEAR.

#### *Winter.*

Second Tenure of The Peacock Scholarship (if holder obtains 1st Class in this examination) .. £38 10s.

1st.	..	College Prize	..	..	..	£20.
2nd.	..	Ditto	..	..	..	£15.
3rd.	..	Ditto	..	..	..	£10.

#### *Summer.*

1st.	..	College Prize	..	..	..	£15.
2nd.	..	Ditto	..	..	..	£10.

Students of each year are classed according to their respective merits in the examinations, and those in the *first* class in each year receive Certificates of Honour, and a preference in the selection for Hospital Appointments.

Free Scholarships are given to distinguished Pupils of Merchant Taylors' and City of London Schools, and Epsom College.

In addition there are awarded—

THE CHESELDEN MEDAL, *Annually.*

THE MEAD MEDAL, *do.*

THE SOLLY MEDAL AND PRIZE, *Biennially.*

THE GRAINGER TESTIMONIAL PRIZE, *Annually.*

THE TREASURER'S GOLD MEDAL, *do.*

Intending Competitors, especially those who have spent a part of their curriculum elsewhere, should apply to the Medical Secretary for detailed regulations.

The CHESELDEN MEDAL, founded by the late GEORGE VAUGHAN, Esq., is annually awarded to the Fourth Year's Student who most distinguishes himself in respect of a Special Practical Examination in Surgery and Surgical Anatomy.

The MEAD MEDAL, founded by Mr. and Mrs. NEWMAN SMITH, is awarded annually, to a Fourth Year's Student, in respect of a Special Practical Examination in Medicine, Pathology and Hygiene.

The **SOLLY MEDAL**, together with a Prize in Money, will be awarded biennially. Those Students are eligible to compete who shall be of from three to six years' standing. The award is made for the best series of Reports of Surgical cases coming under the Student's personal observation in the Wards, not, however, to exceed ten in number. Preference is given, merit in other respects being equal, to Reports illustrated by the author's drawings, and short Clinical Remarks must accompany each Report. The next award will be made at the end of 1893-94, papers to be sent in before April 1st, 1894.

The **GRAINGER TESTIMONIAL PRIZE**, of the value of Fifteen Pounds, is awarded annually for work in Anatomy and Physiology. The conditions of competition for this Prize have recently been altered, and can be learnt from the Medical Secretary.

The **TREASURER'S GOLD MEDAL** for General Proficiency and Good Conduct, is awarded at the end of the 4th Winter Session to the Student who has passed through his pupilage in St. Thomas's Hospital in the most meritorious manner.

### APPOINTMENTS.\*

A **RESIDENT ASSISTANT PHYSICIAN** and a **RESIDENT ASSISTANT SURGEON**, at a salary of £100 per annum each, are from time to time appointed. The appointments are annual, but the tenure of office may be renewed for a term not exceeding three years.

**TWO HOSPITAL REGISTRARS**, at an annual Salary of £100 each, are appointed in each year. They are eligible for annual re-appointment, but may not hold office for more than five years. Preference will be given to Gentlemen who have been distinguished for merit, and have completed their studies in the School. The payment of the Registrars is subject to the presentation of a Report upon the Practice of the Hospital, and to such Report being regarded as satisfactory by the Medical Officers to whom it shall have been referred.

An **OBSTETRIC TUTOR AND REGISTRAR** is appointed each year, at an annual salary of £50. He is eligible for annual reappointment, but may not hold office for more than five years consecutively. The holder of the office takes part in the tutorial instruction of students, under the direction of the Obstetric Physician.

**House Appointments, open to Students who have obtained their diplomas.** (*The duties of these offices commence on the first Tuesday in March, June, September, and December.*)

**FOUR HOUSE PHYSICIANS, FOUR HOUSE SURGEONS, and TWO ASSISTANT HOUSE SURGEONS**, are selected every three months. Two of the House Physicians and the Assistant House Surgeons, are non-resident, but the other Officers are provided with Rooms and Commons in the Hospital, free of expense.

A **SENIOR and JUNIOR OBSTETRIC HOUSE PHYSICIAN** are selected every three months. The former is provided with Rooms and Commons in the Hospital, free of expense. The latter is provided with Commons, and must live near the Hospital.

**TWO OPHTHALMIC HOUSE SURGEONS** are appointed for six months, one of whom receives a Salary at the rate of £50 per annum, and the other is provided with Commons. They must live near the Hospital.

**CLINICAL ASSISTANTS** in the Departments for Diseases of the Throat, Skin, and Ear, are appointed every three months.

In the Special Departments preference is given to those who have worked in a satisfactory manner therein as Clinical Clerks and Dressers.

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\* All these Appointments are open to Students without extra payment.

### Appointments for Un-qualified Students.

CLINICAL CLERKS and DRESSERS to In-Patients are selected to the number of at least 100 each year, from amongst the most eligible pupils. The DRESSER on Accident Duty is provided with a Room and Commons in the Hospital. CLINICAL CLERKS and DRESSERS for the Out-Patients are also appointed, to the number of at least 80 to 100 each year; applicants are required to have passed the 2nd examination of the Conjoint Board, or an equivalent examination, and to have attended a course of instruction in Elementary Clinical Medicine (p. 25). (*The Duties commence on the first Tuesday in January, April, July, and October.*)

OBSTETRIC CLERKS are appointed, in rotation, from a list of Students who have entered their names for the purpose, have attended Lectures on Midwifery and a course of Practical Obstetrics, and passed the "Second Conjoint," or an equivalent Examination. Each Clerk holds office for a fortnight, and Certificates of Honour are awarded to those Gentlemen who have satisfactorily attended Sixty Maternity cases. About 50 Obstetric Clerks are appointed yearly.

ASSISTANTS TO THE TEACHERS OF PRACTICAL AND MANIPULATIVE SURGERY are appointed for the Winter and Summer Sessions.

ASSISTANTS TO THE LECTURER ON MATERIA MEDICA are appointed for the Summer Session.

Students are likewise appointed to act as ASSISTANTS to the DEMONSTRATORS of MORBID HISTOLOGY and of MORBID ANATOMY.

ASSISTANTS IN THE PHYSIOLOGICAL LABORATORY are selected from Students who have completed their Second Winter Session. They receive Certificates of Honour according to merit.

PROSECTORS are appointed in the early part of the Winter Session, and receive Certificates of Honour if recommended.

### REGULATIONS FOR THE EXAMINATION AND CLASSIFICATION OF THE STUDENTS AT THE MEDICAL SCHOOL.

1. In accordance with the Regulations of the Qualifying Bodies, Students must attend the Class Examinations in the subjects for which they have to be certified, and show by their answers to the questions that they have paid proper attention to the Lectures, otherwise the signature to their Schedules may be withheld.

2. There shall be held at least two Examinations in each Winter and one in each Summer Session in each subject on which attendance is required during that Session, and the marks obtained in these Examinations shall be the basis for the Classification of Students and the Award of Prizes for each Session respectively. Provided that any extra Examination in the course of the Session, in any subject, be not allowed to interfere with the ordinary Lectures in other subjects.

3. The number of marks allotted to each subject in the following Schedule is not to be exceeded in case the number of Examinations held during the Session be more than two, but must be distributed amongst the several Examinations.

1st YEAR'S SUBJECTS.	
WINTER . Anatomy . . . . .	600
Practical Anatomy . . . . .	200
Physiology . . . . .	350
Elementary Biology . . . . .	350
Chemistry . . . . .	600
Total . . . . .	2100
SUMMER . Practical Chemistry . . . . .	300
Materia Medica . . . . .	200
Practical Physiology . . . . .	300
Total . . . . .	800

2nd YEAR'S SUBJECTS.	
WINTER . Anatomy . . . . .	600
Practical Anatomy . . . . .	200
Physiology . . . . .	600
Practical Physiology . . . . .	100
Total . . . . .	1500
SUMMER . Midwifery . . . . .	500
Practical Surgery . . . . .	200
Total . . . . .	700

3rd YEAR'S SUBJECTS.	
WINTER . Medicine . . . . .	650
Surgery . . . . .	650
Practical Surgery . . . . .	300
Total . . . . .	1600

SUMMER . Forensic Medicine . . . . .	250
Pathological Anatomy . . . . .	350
Total . . . . .	600



4. Students must obtain at least one-third of the total number of marks in each subject, and not less than two-thirds of the total number allotted to all the subjects collectively, to be placed in the 1st Class.

Those who have obtained one-third of the total number of marks allotted to all the subjects collectively are placed in the 2nd Class.

The names of those who do not obtain either a 1st or 2nd Class position are not published, but a General List showing the exact position of each Student at every Examination is kept by the Secretary, from whom any Student can learn his own position, but no Lecturer shall make known to Students the number of marks obtained by any Student in any subject.

5. The Prizes shall be awarded to the Students holding the 1st, 2nd, and 3rd positions in the 1st Class of each Winter Session, and to those holding the 1st and 2nd positions of the 1st Class in each Summer Session.

6. The number of marks allotted to the Examinations for the MEAD and CHESELDEN Medals shall be 600 each.

7. In awarding the TREASURER'S Medal the number of marks obtained at the Sessional Examinations and in the MEAD and CHESELDEN Examinations shall be counted, provided that, as regards the Examination for the Medals, two-thirds of the maximum marks be obtained, but those obtained in the Entrance Scholarship Competition shall not be included.

8. The Authorities reserve the right of withholding any Prize, if no competitor of sufficient merit present himself.

## Distribution of Prizes for the Past Sessions.

### SUMMER SESSION, 1891.

#### FIRST YEAR'S STUDENTS.

G. G. GENGE, <i>Croydon</i> ...	...	...	...	...	...	{ College Prize, £15, and Certificate of Honour.
W. E. DIXON, <i>Dulwich</i> ...	...	...	...	...	...	{ College Prize, £10, and Certificate of Honour.
W. H. J. PATERSON, <i>Shepherd's Bush</i>	...	...	...	...	...	Certificate of Honour.
W. D. FRAZER, <i>Penarth</i>	...	...	...	...	...	Certificate of Honour.
R. G. STRANGE, <i>Hampstead</i>	...	...	...	...	...	Certificate of Honour.
E. O. THURSTON, <i>Panton Street</i>	...	...	...	...	...	Certificate of Honour.
W. HERBERT, <i>South Kensington</i>	...	...	...	...	...	Certificate of Honour.
H. C. CROUCH, <i>Haverstock Hill</i>	...	...	...	...	...	Certificate of Honour.
A. L. HOME, <i>Hampstead</i>	...	...	...	...	...	Certificate of Honour.
P. W. KENT, <i>St. Albans</i>	...	...	...	...	...	Certificate of Honour.
A. C. FRIEND, <i>Weybridge</i>	...	...	...	...	...	Certificate of Honour.

#### SECOND YEAR'S STUDENTS.

L. J. MISKIN, <i>York Road, Lambeth</i>	...	...	...	...	{ College Prize, £15, and Certificate of Honour.
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#### THIRD YEAR'S STUDENTS.

E. M. HAINWORTH, <i>Blackheath</i>	...	...	...	...	{ College Prize, £15, and Certificate of Honour.
E. SMITH, <i>Wandsworth Common</i>	...	...	...	...	{ College Prize, £10, and Certificate of Honour.



## WINTER SESSION, 1891-92.

### ENTRANCE SCIENCE SCHOLARSHIPS.

A. H. STEWART, <i>Regent's Park</i> ... ..	{	Scholarship, 125 Gs., and Certificate of Honour.
F. H. GERVIS, <i>Haverstock Hill</i> ... ..	{	Scholarship, £60, and Certificate of Honour.

### FIRST YEAR'S STUDENTS.

J. C. HARCOURT, <i>South Woodford</i> ... ..	{	The Wm. Tite Scholarship, £27 10s., and Certificate of Honour.
B. DYBALL, <i>Brixton</i> ... ..	{	College Prize, £20, and Certificate of Honour.
A. H. STEWART, <i>Regent's Park</i> ... ..	{	College Prize, £10, and Certificate of Honour.
F. B. THORNTON, <i>Leicester</i> ... ..		Certificate of Honour.
M. TAKAYASU, <i>Japan</i> ... ..		Certificate of Honour.
A. J. MARTINEAU, <i>Lupus Street</i> ... ..		Certificate of Honour.
F. H. GERVIS, <i>Haverstock Hill</i> ... ..		Certificate of Honour.
H. N. GOODE, <i>Kensington</i> ... ..		Certificate of Honour.

### SECOND YEAR'S STUDENTS.

G. G. GENGE, <i>Croydon</i> ... ..	{	The Peacock Scholarship, £38 10s., and Certificate of Honour.
W. E. F. TINLEY, <i>Whitby</i> ... ..		College Prize, £20, and Certificate of Honour.
E. L. PERRY, <i>St. George's Square</i> ... ..	{	College Prize, £10, and Certificate of Honour.
A. L. HOME, <i>Hampstead</i> ... ..		Certificate of Honour.
W. H. J. PATERSON, <i>Shepherd's Bush</i> ... ..	{	Certificate of Honour.
E. O. THURSTON, <i>Panton Street</i> ... ..		Certificate of Honour.
W. D. FRAZER, <i>Penarth</i> ... ..		Certificate of Honour.

### THIRD YEAR'S STUDENTS.

A. E. RUSSELL, <i>Greenwich</i> ... ..	{	College Prize, £20, and Certificate of Honour.
S. W. F. RICHARDSON, <i>Whitby</i> ... ..	{	2nd Tenure of the Mus- grove Scholarship, and Certificate of Honour.

### PRACTICAL MEDICINE.

A. R. O. MILTON, <i>Brighton</i> ... ..	{	The Mead Medal, founded by Mr. and Mrs. NEWMAN SMITH.
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### SURGERY AND SURGICAL ANATOMY.

W. G. SUTCLIFFE, <i>Clapham</i> ... ..	{	The Cheselden Medal, founded by the late GEORGE VAUGHAN, Esq.
E. SMITH, <i>Wandsworth Common</i> ... ..		Certificate of Honour.
W. REDPATH, <i>Norwood Road</i> ... ..		Certificate of Honour.

### SOLLY MEDAL AND PRIZE.

W. B. WINSTON, <i>Oxford Gardens</i> ... ..	Medal and Prize, £20.
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### FOR GENERAL PROFICIENCY AND GOOD CONDUCT.

E. SMITH, <i>Wandsworth Common</i> ... ..	{	The Treasurer's Gold Medal.
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**CERTIFICATES OF HONOUR.****ANATOMICAL ASSISTANTS.**

S. W. F. RICHARDSON		A. E. RUSSELL
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**PROSECTORS.**

H. C. CROUCH		L. N. PENTREATH
G. G. GENGE		E. L. PERRY
A. L. HOME		E. O. THURSTON

**ASSISTANTS IN PHYSIOLOGICAL LABORATORY.**

W. E. DIXON		J. S. HUDSON
H. M. HARRISON		W. H. J. PATERSON

**PATHOLOGICAL ASSISTANTS.**

J. C. DURSTON		W. G. SUTCLIFFE
E. M. HAINWORTH		

**HOUSE PHYSICIANS.**

C. R. BOX		Non-Resident
T. H. KELLOCK		
C. LATTER		G. R. F. STILWELL
J. J. PERKINS		D. F. SHEARER
C. WYMAN		W. P. PURVIS

**HOUSE SURGEONS.**

L. COBBETT		T. H. KELLOCK
T. H. HAYDON		C. R. BOX
J. R. HARPER		W. F. E. MILTON
C. WYMAN		T. A. M. FORDE

**ASSISTANT HOUSE SURGEONS.**

L. COBBETT		T. H. KELLOCK
C. WYMAN		C. R. BOX
W. F. E. MILTON		H. BURDEN
T. A. M. FORDE		P. J. ATKEY

**OBSTETRIC HOUSE PHYSICIANS.**

Senior		Junior
J. R. HARPER		W. F. UMNEY
W. G. G. STOKES		A. BANKS
W. F. UMNEY		W. L. WAINWRIGHT
A. BANKS		T. H. HAYDON

**OPHTHALMIC HOUSE SURGEONS.**

C. H. USHER		S. G. TOLLER
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**CLINICAL ASSISTANTS IN THE SPECIAL DEPARTMENTS.**

Skin		Throat		Ear
F. W. BEVILLE		P. J. ATKEY		E. H. G. MORRIS
L. G. SCUDAMORE		A. DALZELL		J. H. FISHER
		T. A. M. FORDE		C. S. WALLACE

The following Distinctions at the London University have been obtained by Students of St. Thomas's Hospital during the past year:—

**HONOURS EXAMINATIONS—UNIV. LOND.**

Gold Medal in Medicine and Third Class in Forensic Medicine (M.B.), Mr. T. P. COWEN.

Second Class in Medicine and Third Class in Obstetric Medicine (M.B.), Mr. W. F. UMNEY.

Second Class in Anatomy and Third Class in Physiology (Intermed. M.B.), Mr. S. W. F. RICHARDSON.

Third Class in Anatomy (Intermed. M.B.), Mr. A. E. RUSSELL.

Third Class in Botany (B.Sc.), Mr. W. E. DIXON.

## FEES FOR ATTENDANCE ON THE LECTURES

AND ON THE

## PRACTICE OF THE HOSPITAL.

## COMPOSITION FEES.

The Composition Fee\* to Hospital Practice and Lectures may be paid in the following ways:

- 1st. One Hundred and Fifty Pounds on entrance in one sum;
- 2nd. One Hundred and Fifty-seven Pounds Ten Shillings in instalments;
  - (a) By two payments, £85 on entrance, and £72 10s. at the beginning of the second year;
  - (b) By three payments, £75 at the beginning of the first year, £50 at the beginning of the second year, and £32 10s. at the beginning of the third year;
  - (c) By four payments, £65 at the beginning of the first year, £50 at the beginning of the second year, £30 at the beginning of the third year, and £12 10s. at the beginning of the fourth year.

Gentlemen entering at St. Thomas's for Lectures and Hospital Practice of the second and subsequent years pay £130 on entrance, or three instalments of £52 10s., £42, and £42 (see pages 18 and 19). Students entering for Lectures and Hospital Practice of third and subsequent years (see page 19) pay a composition fee of £80, or £52 10s. on entrance, and £31 10s. one year subsequently.

The Fee for attendance on the *general* subjects required of Students in Dental Surgery, is for the two years, £65, or by instalments, £55 for the first year, and £15 for the second year. If certificates for *Dental* practice are also required, the special fee for that subject (page 37) has to be paid.

[N.B.—It should be understood that the Composition or “Perpetual” Fees are intended to cover unlimited attendance on Lectures and Hospital Practice. If, however, a student fail to pass the several professional examinations within periods deemed reasonable by the School authorities, his rights as a Student may be suspended or determined at any time by the School Committee, with the approval of the Treasurer.]

Legally qualified Medical Practitioners are admitted to the Hospital practice, and to the Lectures and Library, on payment of a fee of £15 15s. for unlimited attendance; but are not entitled to receive certificates for such attendance without payment for the special certificates required (see p. 37).

\* Students who have commenced the study of the Profession otherwise than by attendance at a Medical School, will be considered to be first year's Students, on joining the Medical School, but a deduction from the Composition Fee will be allowed in such cases.

NOTE.—Cheques may be made payable to the Medical Secretary, and crossed “London and County Bank, Lambeth.”

The Courses may be attended separately on the following terms, which entitle to Certificates for such Attendances.

*For the Medical and Surgical Practice, including Clinical Lectures and the Special Departments.*

Three months	...	...	£21.		Twelve months	...	...	£36 15s.
Six months	...	...	£26 5s.		Unlimited	...	...	£73 10s.

The Practice of the Medical or Surgical Wards, or any one of the Special Departments, may be attended separately.

	<i>Medical or Surgical.</i>			<i>Each Special Department.</i>		
Three months	...	...	£15 15s.	...	...	£5 5s.
Six months	...	...	£21.	...	...	£10 10s.
Twelve months	...	...	£26 5s.	...	...	£15 15s.

*Lectures and Demonstrations.*

Anatomy, Physiology	...	...	...	...	each	£10 10s.
Practical Anatomy (twelve months), Practical Physiology including Histology	...	...	...	...	each	£10 10s.
Medicine, Surgery, Chemistry	...	...	...	...	"	£7 7s.
Midwifery	...	...	...	...	...	£6 6s.
Pharmacology and Therapeutics, Physics, Forensic Medicine	...	...	...	...	each	£5 5s.
Pathology, including Pathological Histology	...	...	...	...	...	£8 8s.
Public Health, Insanity, Diseases of the Eye	...	...	...	...	each	£3 3s.
Practical Medicine, Practical Obstetrics, Laryngology	...	...	...	...	"	£3 3s.
Practical Surgery, Practical Chemistry, Elementary Biology	...	...	...	...	"	£6 6s.
Demonstrations in Post-Mortem room (twelve months)	...	...	...	...	...	£10 10s.

Note.—A small charge for materials is made for all Practical Courses taken separately.

**SPECIAL COURSES** (not included in the Composition Fee) and **EXTRA EXPENSES.**

Comparative Anatomy	...	...	...	...	...	£2 2s.
Botany	...	...	...	...	...	£3 3s.
Operative Surgery	...	...	...	...	...	£5 5s.
Ditto of Eye	...	...	...	...	...	£2 2s.
Advanced Anatomy, Advanced Physiology	...	...	...	...	each	£6 6s.
Public Health—Six months' Laboratory Instruction for the Diploma	...	...	...	...	...	£21.
Ditto Short Course	...	...	...	...	...	£6 6s.
Vaccination	...	...	...	...	...	£1 1s.
Practical Pharmacy	...	...	...	...	...	£3 3s.
Attendance at a Fever Hospital of the Metropolitan Asylums Board	...	...	...	...	...	£3 3s.

Students who pay a Composition Fee are now supplied with chemicals and materials for one course of Practical Chemistry, Practical Physiology, and Elementary Biology without extra charge, but there are certain instruments and materials required during the course of study, as follows, viz.:

Those attending Practical Physiology and Physiological Demonstrations must provide themselves with Microscopes.

Students Dissecting pay for the "parts" they dissect at fixed rates, which are notified in the Library.

Each Clinical Clerk must provide himself with a Stethoscope and Registering Clinical Thermometer. Each Dresser is required to have a Registering Clinical Thermometer, a Pocket Case of Instruments, and a Case of Silver or Plated Catheters.

## UNIVERSITY OF LONDON.

## PRELIMINARY SCIENTIFIC AND INTERMEDIATE M.B. CLASSES.

## PRELIMINARY SCIENTIFIC EXAMINATION.

Special instruction in the subjects required for this Examination is given in the form of (a) Lectures and (b) Classes, from October to July.

		Mon.	Tues	Wed.	Thu.	Fri.	Sat.
Botany.	{ Lectures (Summer)	—	10.0	10.0	—	—	—
A. W. BENNETT, M.A.	{ Classes (Winter & Summer)	—	—	11.0	—	—	—
Chemistry.	{ Lectures (Winter)	1130	—	—	—	1030	1030
W. R. DUNSTAN, M.A.	{ Practical (Winter)	—	9.0	—	9.0	—	—
	{ „ (Summer)		Laboratory open daily				
Physics.							
W. R. DUNSTAN, M.A.	{ Lectures	—	—	9.0	—	—	—
and	{ and						
W. H. INCE, Ph.D.	{ Practical Work	—	—	9.0	9.0	—	—
	{ Winter						
	{ Summer						
Zoology.	{ Lectures (Summer)			(See Time Table.)			
F. G. PARSONS, F.R.C.S.	{ Classes (Winter)	—	—	1.30	—	—	—
	{ „ (Summer)	—	—	—	1030	—	—

N.B.—A Microscope and simple Dissecting Apparatus must be provided by each Member of the Class, and Two Guineas are charged for materials.

Fee, inclusive of Practical Chemistry .. .. *Sixteen Guineas.*

Fee for any single subject .. .. *Five Guineas.*

Subsequent Courses, half Fee, if recommended by the respective Teachers.

In the Practical Classes of Botany and Zoology, each Student has the opportunity of dissecting the chief types.

## INTERMEDIATE EXAMINATION IN MEDICINE.

Special Classes in Anatomy, Physiology and Histology, Organic Chemistry, Materia Medica and Pharmaceutical Chemistry are held by the Lecturers and Demonstrators for the July Examination.

Fee to Students of the Hospital inclusive of

Organic Analysis and Chemicals\* .. .. *Nine Guineas.*

To others ditto .. .. *Twelve Guineas.*

Fee for any Single Subject .. .. *Three Guineas.*

Subsequent Courses, half Fee, if recommended by the respective Teachers (except Chemicals, for which full fee is charged).

\* Instruction and Practice in Organic Analysis is essential for this Examination.

N.B.—Private Classes are held for the Final M.B. Examination.



# St. Thomas's Hospital.

## MEDICAL AND PHYSICAL SOCIETY.

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*President, 1892-93.*

DR. CULLINGWORTH.

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*Vice-Presidents.*

THE PHYSICIANS.

THE SURGEONS.

THE ASSISTANT PHYSICIANS.

THE ASSISTANT SURGEONS.

MR. LE GROS CLARK.

DR. CRANSTOUN CHARLES.

DR. COPEMAN.

MR. WALTER EDMUNDS.

MR. SYDNEY JONES.

DR. KILNER.

DR. MACKENZIE.

DR. RAYNER.

MR. G. RENDLE.

MR. S. G. SHATTOCK.

DR. SHERRINGTON.

DR. SEYMOUR TAYLOR.

MR. C. E. TRUMAN.

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*Treasurer.*—MR. G. S. SAUNDERS.

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*Hon. Secretaries.*

MR. J. H. FISHER.

MR. T. G. NICHOLSON.

---

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MR. L. V. TEBBS.

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MR. E. A. SAUNDERS.

MR. P. L. BLABER.

MR. J. M. CHAMBERS.

MR. R. S. RANSOME.

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This Society was originated in the early part of the present century by students of the Hospital, and has for its object the reading and discussion of papers on Medicine, Surgery, and subjects of General Interest, the narration of cases, and the exhibition of specimens of Physiological and Pathological interest. The Meetings are held in the Library on alternate Thursdays at 8.30 P.M., and terminate not later than 10 P.M.

The soirée, to which past and present students are invited, will be held in May or June.

Further information can be obtained of the Hon. Secretaries.

# ST. THOMAS'S HOSPITAL REPORTS.

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VOL. XXI., NEW SERIES,

EDITED BY

T. D. ACLAND, M.A., M.D. OXON, and

B. PITTS, M.A., M.C. CANTAB.

*Will be Published in due Course.*

It will contain contributions from Members of the Staff and others, together with the Statistical Reports of the Hospital, by the Medical and Surgical Registrars, to December 31st, 1891.

The New Series commenced in 1870, and complete Sets may still be had.

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# SEPTEMBER, 1892.

1	TH	
2	F	
3	S	
4	S	Twelfth Sunday after Trinity.
5	M	
6	TU	House Officers, &c., commence duty.
7	W	Last day for applications for Clinical Clerkships and
8	TH	[Dresserships.]
9	F	
10	S	
11	S	Thirteenth Sunday after Trinity.
12	M	
13	TU	
14	W	
15	TH	
16	F	
17	S	
18	S	Fourteenth Sunday after Trinity.
19	M	Last day for entry for B.Sc. Exam., Univ. Lond.
20	TU	
21	W	St. Matthew. Meeting to appoint Clinical Clerks and
22	TH	[Dressers.]
23	F	
24	S	
25	S	Fifteenth Sunday after Trinity.
26	M	
27	TU	
28	W	
29	TH	Michaelmas Day.
30	F	Last day for Essay for Grainger Prize.

*Preliminary Examination in Arts of the Society of Apothecaries held this month.  
The Hospital Entrance Science Scholarships Examination takes place during  
the last week of this month.*

# OCTOBER, 1892.

1	S	
2	§	Sixteenth Sunday after Trinity.
3	M	Distribution of Prizes, 3 P.M. Annual Dinner. Last [day for Entry Univ. Lond. M.B. Exam.
4	TU	Clinical Clerks and Dressers commence duty.
5	W	
6	TH	
7	F	Meeting of Library Committee.
8	S	
9	§	Seventeenth Sunday after Trinity.
10	M	
11	TU	
12	W	
13	TH	
14	F	
15	S	
16	§	Eighteenth Sunday after Trinity.
17	M	Univ. Lond. B.Sc. Exam.
18	TU	St. Luke.
19	W	
20	TH	
21	F	
22	S	
23	§	Nineteenth Sunday after Trinity.
24	M	
25	TU	
26	W	
27	TH	
28	F	St. Simon and St. Jude.
29	S	
30	§	Twentieth Sunday after Trinity.
31	M	Univ. Lond. M.B. Exam.

*The Registration and Museum Committees meet during this month.*

*The Primary Examination of the Society of Apothecaries is held Quarterly, in the months of October, January, April, and July. The Final is held monthly; the Surgical part commences on the second Wednesday, and the Medical on the Monday following.*

*First, Second, and Third Examinations of the Examining Board in England are held this month.*

# NOVEMBER, 1892.

1	TU	All Saints.
2	W	Last day for applications for House Offices, &c.*
3	TH	Notice—30th, last day for applications for Medical and
4	F	[Surgical Registrarships.
5	S	
6	S	Twenty-first Sunday after Trinity.
7	M	Entry for M.D. and M.S. Exams. Univ. Lond.
8	TU	
9	W	Meeting to appoint House Officers, &c. Prince of
10	TH	[Wales b. 1841.
11	F	
12	S	
13	S	Twenty-second Sunday after Trinity.
14	M	
15	TU	
16	W	
17	TH	
18	F	
19	S	Univ. Lond. B.Sc. Pass List published.
20	S	Twenty-third Sunday after Trinity.
21	M	
22	TU	Univ. Lond. M.B. Pass List published. Last day for
		[Entry for B.S. Exam., Univ. Lond.
23	W	Univ. Lond. M.B. Honours Exam.
24	TH	
25	F	
26	S	
27	S	First Sunday in Advent.
28	M	
29	TU	
30	W	St. Andrew. Last day for applications for Medical
		[and Surgical Registrarships.

*Examinations for the Fellowship of the Royal College of Surgeons of England held this month.*

*\* Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*



# DECEMBER, 1892.

1	TH	
2	F	
3	S	
4	S	Second Sunday in Advent.
5	M	Univ. Lond. M.D. and M.S. Exam. [mence duty.
6	TU	Univ. Lond. B.S. Exam. House Officers, &c., com-
7	W	Last day for applications for Clinical Clerkships and
8	TH	[Dresserships.
9	F	
10	S	
11	S	Third Sunday in Advent.
12	M	Last day for Entry for Matriculation Univ. Lond.
13	TU	
14	W	Meeting to appoint Clinical Clerks and Dressers.
15	TH	
16	F	Univ. Lond. M.D. List published.
17	S	1st Sessional Exam. commences.
18	S	Fourth Sunday in Advent.
19	M	Last day for Entry for Prel. Sci. and Int. Med. Exam.
20	TU	[Univ. Lond.
21	W	St. Thomas.
22	TH	
23	F	
24	S	
25	S	CHRISTMAS DAY.
26	M	Saint Stephen.
27	TU	Saint John, Evang.
28	W	Holy Innocents.
29	TH	
30	F	
31	S	

*University of Cambridge First, Second, and Third M.B. Examinations are held this month.*

*Preliminary Examination in Arts of the Society of Apothecaries held this month.*

*Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.*

# JANUARY, 1893.

1	S	First Sunday after Christmas. Circumcision.
2	M	
3	TU	Clinical Clerks and Dressers commence duty.
4	W	
5	TH	
6	F	Meeting of Library Committee. Epiphany.
7	S	
8	S	First Sunday after Epiphany.
9	M	Univ. Lond. Matriculation Examination.
10	TU	
11	W	
12	TH	
13	F	
14	S	
15	S	Second Sunday after Epiphany.
16	M	Univ. Lond. Prelim. Scientific (M.B.) Exam. and
17	TU	Intermd. Exam. in Medicine.
18	W	
19	TH	
20	F	
21	S	
22	S	Third Sunday after Epiphany.
23	M	
24	TU	
25	W	Conversion of St. Paul.
26	TH	
27	F	
28	S	
29	S	Septuagesima Sunday.
30	M	
31	TU	

*First, Second, and Third Examinations of the Examining Board in England are held this month.*

*The Registration and Museum Committees meet during this month.*

# FEBRUARY, 1893.

1	W	Last day for applications for House Offices, &c.*
2	Th	
3	F	
4	S	
5	S	Sexagesima Sunday.
6	M	
7	Tu	
8	W	Univ. Lond. Prel. Sci. (M.B.) List published. Meeting
9	Th	[to appoint House Officers, &c.
10	F	Queen Victoria married, 1840.
11	S	
12	S	Quinquagesima Sunday.
13	M	
14	Tu	Univ. Lond. Int. Med. Pass List published.
15	W	Ash Wednesday. Univ. Lond. Matric. List published.
16	Th	
17	F	
18	S	
19	S	First Sunday in Lent.
20	M	
21	Tu	
22	W	
23	Th	
24	F	St. Matthias.
25	S	
26	S	Second Sunday in Lent.
27	M	
28	Tu	

\* Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.

# MARCH, 1893.

1	W	Last day for applications for Clinical Clerkships and [Dresserships.
2	TH	
3	F	
4	S	
5	S	Third Sunday in Lent.
6	M	
7	TU	House Officers, &c., commence duty.
8	W	Meeting to appoint Clinical Clerks and Dressers.
9	TH	
10	F	Prince of Wales married, 1863.
11	S	
12	S	Fourth Sunday in Lent.
13	M	
14	TU	
15	W	
16	TH	
17	F	
18	S	
19	S	Fifth Sunday in Lent.
20	M	
21	TU	
22	W	
23	TH	
24	F	
25	S	Annunciation. LADY DAY.
26	S	Palm Sunday.
27	M	
28	TU	
29	W	
30	TH	Registrar's Report for last year due. Last day for
31	F	Good Friday. [Reports for Solly Medal (1894).

*Preliminary Examination in Arts of the Society of Apothecaries held this month.*

# APRIL, 1893.

1	S	
2	S	EASTER SUNDAY. [Univ. Lond.
3	M	Bank Holiday. Last day for Entry for M.B. Exam.
4	TU	Clinical Clerks and Dressers commence duty.
5	W	
6	TH	
7	F	Meeting of Library Committee.
8	S	
9	S	First Sunday after Easter. Low Sunday.
10	M	
11	TU	
12	W	
13	TH	
14	F	
15	S	
16	S	Second Sunday after Easter.
17	M	
18	TU	
19	W	
20	TH	
21	F	
22	S	
23	S	Third Sunday after Easter.
24	M	
25	TU	St. Mark.
26	W	
27	TH	
28	F	
29	S	
30	S	Fourth Sunday after Easter.

*Univ. Camb. Third M.B. and First, Second, and Third Examinations of the Examining Board in England are held this month.*

*The Examinations for the Mead and Cheselden Medals take place this month.*

*The Annual Inspection of the Museum and meeting of Museum Committee take place during this month.*

*The Registration Committee meets during this month.*



# MAY, 1893.

1	M	St. Philip and St. James. Summer Session commences.
2	TU	[Univ. Lond. M.B. Exam.
3	W	Last day for applications for House Offices, &c.*
4	TH	
5	F	
6	S	
7	S	Fifth Sunday after Easter. Rogation Sunday.
8	M	Last day for Entry for Matric. Univ. Lond.
9	TU	
10	W	Meeting to appoint House Officers, &c.
11	TH	Ascension Day. Holy Thursday. First Stone of St.
12	F	[Thomas's New Hospital laid by H.M. the Queen, 1868.
13	S	
14	S	Sunday after Ascension Day.
15	M	
16	TU	
17	W	
18	TH	
19	F	
20	S	
21	S	WHIT SUNDAY.
22	M	Bank Holiday. No Lectures.
23	TU	Univ. Lond. M.B. Pass List published.
24	W	Queen Victoria born, 1819.
25	TH	
26	F	
27	S	
28	S	TRINITY SUNDAY.
29	M	
30	TU	
31	W	

*Examinations for the Fellowship of the Royal College of Surgeons of England held this month.*

*\* Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

# JUNE, 1893.

1	TH	
2	F	
3	S	
4	S	First Sunday after Trinity.
5	M	
6	TU	House Officers, &c., commence duty.
7	W	Last day for applications for Clinical Clerkships and
8	TH	[Dresserships.]
9	F	
10	S	
11	S	Second Sunday after Trinity. St. Barnabas.
12	M	Univ. Lond. Matric. Exam. Last day for Entry for
13	TU	[Int. Med. Exam. Univ. Lond.]
14	W	Meeting to appoint Clinical Clerks and Dressers.
15	TH	
16	F	
17	S	
18	S	Third Sunday after Trinity. [Lond.]
19	M	Last day for Entry for Prel. Sci. (M.B.) Exam. Univ.
20	TU	Queen's Accession.
21	W	New St. Thomas's Hospital opened by H. M. the
22	TH	[Queen, 1871.]
23	F	
24	S	St. John Baptist. Midsummer Day.
25	S	Fourth Sunday after Trinity.
26	M	
27	TU	
28	W	Queen Victoria crowned 1838.
29	TH	St. Peter.
30	F	

*The Harveian Oration is delivered at the Royal College of Physicians annually in the month of June.*

*Doctor of Science Examination at London University takes place within the first 21 days of June.*

*Univ. Camb. First and Second M.B. Examinations are held within the first 14 days of June.*

*Preliminary Examination in Arts of the Society of Apothecaries held this month.*

*Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.*

# JULY, 1893.

1	S	
2	§	Fifth Sunday after Trinity.
3	M	
4	TU	Clinical Clerks and Dressers commence duty.
5	W	Last day for applications for House Offices, &c., for
6	TH	[September.*
7	F	Meeting of Library Committee.
8	S	
9	§	Sixth Sunday after Trinity.
10	M	Univ. Lond. Int. Med. Exam.
11	TU	
12	W	Meeting to appoint House Officers, &c., for September.
13	TH	[Univ. Lond. Matric. List published.
14	F	
15	S	
16	§	Seventh Sunday after Trinity.
17	M	Univ. Lond. Prelim. Scientific (M.B.) Exam.
18	TU	
19	W	
20	TH	
21	F	
22	S	
23	§	Eighth Sunday after Trinity.
24	M	
25	TU	St. James.
26	W	
27	TH	
28	F	
29	S	
30	§	Ninth Sunday after Trinity.
31	M	

*First, Second, and Third Examinations of the Examining Board in England are held this month.*

*The Registration and Museum Committees meet during this month.*

*\* Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

# AUGUST, 1893.

1	TU	
2	W	
3	TH	
4	F	
5	S	
6	S	Tenth Sunday after Trinity.
7	M	Bank Holiday.
8	TU	Univ. Lond. Int. Med. Pass List published.
9	W	Univ. Lond. Prelim. Sci. Pass List published.
10	TH	
11	F	
12	S	
13	S	Eleventh Sunday after Trinity.
14	M	
15	TU	
16	W	
17	TH	
18	F	
19	S	
20	S	Twelfth Sunday after Trinity.
21	M	
22	TU	
23	W	
24	TH	St. Bartholomew.
25	F	
26	S	
27	S	Thirteenth Sunday after Trinity.
28	M	
29	TU	
30	W	
31	TH	

# SEPTEMBER, 1893.

1	F	
2	S	
3	S	Fourteenth Sunday after Trinity.
4	M	
5	TU	House Officers, &c., commence duty.
6	W	Last day for applications for Clinical Clerkships and
7	TH	[Dresserships.
8	F	
9	S	
10	S	Fifteenth Sunday after Trinity.
11	M	
12	TU	
13	W	
14	TH	
15	F	
16	S	
17	S	Sixteenth Sunday after Trinity.
18	M	Last day for Entry for B.Sc. Exam., Univ. Lond.
19	TU	
20	W	Meeting to appoint Clinical Clerks and Dressers.
21	TH	St. Matthew.
22	F	
23	S	
24	S	Seventeenth Sunday after Trinity.
25	M	
26	TU	
27	W	
28	TH	
29	F	Michaelmas Day.
30	S	Last day for Essay for Grainger Prize.

*Preliminary Examination in Arts of the Society of Apothecaries held this month.  
The Hospital Entrance Science Scholarships Examination takes place during  
the last week of this month.*





# LIST OF STUDENTS

WHO HAVE OBTAINED

## Honours in the Annual Examinations.

*w refers to Winter and s to Summer Session.*

*The Addresses are those given at the time of Entry.*

### ABBOTT (F. C.),\* Gorleston.

w 1884-5. 1st Year Student, 1st Entrance Science Scholarship. The Wm. Tite Scholarship.

s 1885. 1st Year Student, 1st Coll. Prize.

w 1885-6. 2nd Year Student, The Peacock Scholarship.

w 1886-7. 3rd Year Student, 2nd tenure of Peacock Scholarship with 1st College Prize.

w 1887-8. 4th Year Student, The Cheselden Medal;  
Treasurer's Gold Medal.

### ACLAND (T. D.),† Oxford.

w 1877-8. 3rd Year Physical Society's Prize. Paper published in Hospital Reports, Vol. VIII.

w 1878-9. 4th Year Student. Mead Medal.

### ADDY (B.), West Deeping, Lincolnshire.

1869. 1st Year Student, 1st College Prize;

Physical Society's 1st Year's Prize.

1870. 2nd Year Student, 1st Coll. Prize;  
Physical Society's 2nd Year's Prize.

1871. 3rd Year Student, 1st Coll. Prize;  
Prosecutor's Prize;  
Treasurer's Gold Medal.

### ALLINGHAM (W.),‡ Bermondsey.

1852. Descriptive Anatomy, Hon. Cert.;

Chemistry, Hon. Cert.

1853. Midwifery, Hon. Cert.

1854. Medicine, Hon. Cert.;

Descriptive Anatomy, Prize;

Midwifery, Hon. Cert.;

Physical Society's Essay, Prize;

Surgery, Prize;

Physiology, Hon. Cert.

1855. Medicine, Prize;

Descriptive Anatomy, Hon. Cert.;

Physiology, Hon. Cert.;

Clinical Medicine, President's Prize;

Clinical Medicine, Treasurer's Prize.

\* Surgical Registrar and Demonstrator of Anatomy at St. Thomas's Hospital.

† Assistant Physician, St. Thomas's Hospital. Assistant Physician, Brompton Hospital.

‡ Late Surgeon to St. Mark's Hospital and to Great Northern Hospital, formerly Surgical Tutor, Demonstrator of Anatomy, and Surgical Registrar at St. Thomas's Hospital.

§ Surgeon, Surgeon for Skin Diseases to, and Joint Lecturer on Anatomy at, St. Thomas's Hospital. Professor of Anatomy to the Royal Academy, Hunterian Professor of Pathology and Surgery to the Royal College of Surgeons, Member of the Board of

### ANDERSON (W.),§ Clapham, Surrey.

1865. 1st Year Student, 3rd Coll. Prize.

1866. 2nd Year Student, 3rd Coll. Prize.

1867. 3rd Year Student, 1st Coll. Prize;  
Physical Society's 3rd Year's Prize  
Cheselden Medal.

### ARMSTRONG (H. G.), Reading.

s 1872. 1st Year Student, Hon. Cert.

w 1874. 3rd Year Student, 3rd Coll. Prize.

### ATKINSON (F. P.), Kew.

1861. 1st Year Matriculation Examination—Classics and Mathematics,  
Hon. Cert.

### ATKINSON (J.), Kirkby-Lonsdale.

1853. Chemistry, Hon. Cert.

### AVELING (C. T.), Shacklewell.

1863. Matriculation Examination—  
Physics and Natural History,  
1st College Prize;

1st Year Student, 1st College Prize.

1864. 2nd Year Student, 2nd College Prize.

1865. 3rd Year Student, 3rd College Prize.

### BAILEY (J. H. T.), Greenwich.

1843. Materia Medica, Hon. Cert.

### BAIN (J.)

1855. Midwifery, Hon. Cert.

### BALLANCE (C. A.),|| Lower Clapton.

w 1875-6. 1st Year Student, Hon. Cert.

w 1876-7. 3rd Year Student, 3rd College Prize, and Physical Society's 3rd Year's Prize;

1880. The Solly Medal and Prize.

### BANKS (A.), Clapham.

w 1887-8. 1st Year Student, 1st Coll. Prize.

s 1890. 3rd Year Student, 2nd Coll. Prize.

w 1890-91. 4th Year Student, The Cheselden Medal.

### BARKER (F. R.), Aldershot.

w 1875. Prosecutor's Prize.

### BARRON (H. J.), Guilford Street, Russell Square.

w 1877-8. 2nd Year Student, Prosecutor's Prize.

Examiners in Anatomy to the Examining Board in England.

|| Assistant Surgeon, Surgeon for Diseases of the Ear, and Teacher of Practical Surgery, St. Thomas's Hospital. Assistant Surgeon to the Hospital for Sick Children, Great Ormond Street. Late Senior Assistant Surgeon to the West London Hospital. Late Surgical Registrar and Demonstrator of Anatomy at St. Thomas's Hospital.

**BARWELL (R.),\* Norwich.**

1847. Medicine, Hon. Cert.;  
Midwifery, Hon. Cert.  
1848. Physical Society's Essay, Treasurer's Prize;  
Physiology and Anatomy, Hon. Cert.,  
Midwifery, Hon. Cert.;  
Dresser's Surg. Repts., Hon. Cert.  
1850. Clinical Medicine, Prize.

**BATESON (J. M.), Kirkby-Lonsdale.**

1855. Chemistry, Hon. Cert.

**BATTLE (W. H.),† Hanworth, Lincolnshire.**

- s 1874. Hon. Cert.  
w 1875. 2nd Year Student, 3rd College Prize.  
w 1876-7. 3rd Year Student, The First Solly Medal and Prize.

**BEAL (P.), Plymouth.**

1844. Chemistry, 2nd Prize.

**BEARDSLEY (A.), Shipley, Derby.**

1843. Midwifery, 2nd Prize.

**BEDFORD (R. J.),‡ Sleaford.**

1858. Midwifery, Hon. Cert.

**BENWELL (H. D.), Greenwich.**

1843. Chemistry, 2nd Prize.  
1845. Physiology and Anatomy, Medal.  
1847. Clinical Medical Reports, Prize;  
Gen. Proficiency, Treas. Medal.

**BELL (C. N.), Rochester.**

1867. 3rd Year Student, 3rd Coll. Prize.

**BELL (J. V.), Rochester.**

1859. 1st Year Student, Treasurer's 2nd Prize; Matriculation Examination—Classics and Mathematics, Hon. Cert.  
1860. 2nd Year Student, Hon. Cert.  
1861. 3rd Year Student, 3rd Coll. Prize.

**BERNAYS (H. L.), Chatham.**

- w 1873. Prosecutor's Prize.

**BERNAYS (A. V.), Great Stanmore.**

- s 1876. 1st Year Student, Hon. Cert.  
w 1880-81. 3rd Year Student, 1st Coll. Prize.

**BICKLE (L. W.), St. Leonard's-on-Sea.**

- s 1878. 1st Year Student, 3rd Coll. Prize;  
s 1879. 2nd Year Student, 1st Coll. Prize.

**BIDDLE (D.), Wotton-under-Edge.**

1860. 1st Year Student, Treas. Prize;  
Matriculation Exam.—Prize.  
1861. 2nd Year Student, Hon. Cert.  
1862. 3rd Year Student, Hon. Cert.

**BIDWELL (H.), Ely.**

- w 1883-4. 4th Year Student, qualified for Mead Medal.

**BIDWELL (L. A.), Lee.**

- w 1885-6. 4th Year Student, qualified for Cheselden Medal.

\* Consulting Surgeon to Charing Cross Hospital.

† Assistant Surgeon to St. Thomas's Hospital, to the Royal Free Hospital, and to the East London Hospital for Children and Women, Shadwell. Late Resident Assistant Surgeon, and Surgical Registrar, St. Thomas's Hospital.

‡ Late Assistant-Surgeon at the "Dreadnought" Hospital Ship.

**BIRTWELL (H. H.), Enfield, Lancashire.**

1863. 3rd Year Student, Hon. Cert.

**BLACK (J.), Kentish Town.**

- w 1872. 2nd Year Student, Prosecutor's Prize.

**BLACK (W. S.), Chesterfield, Derby.**

1855. Midwifery, Hon. Cert.;  
Medicine, Hon. Cert.

**BLACKETT (W. C.), Durham.**

1851. Descriptive Anatomy, Hon. Cert.

**BLADES (C. C.).**

1856. Midwifery, Hon. Cert.

**BONE (W.), Camberwell.**

1857. 1st Year Student, Treas. 1st Prize.  
1858. 2nd Year Student, Treas. 1st Prize.

**BONSER (J. H.), Sutton-in-Ashfield.**

1871. 3rd Year Student, 2nd Coll. Prize;  
Cheselden Medal.

**BOULGER (J.), Gravesend.**

1870. 1st Year Student, Sir Wm. Tite's Scholarship.  
1871. 2nd Year, Sir W. Tite's Scholarship.  
w 1872. 3rd Year, Sir W. Tite's Scholarship.

**BOX (C. R.), Camberwell.**

- w 1885-6. 1st Year Student, 2nd Coll. Prize.

**BOWEN (E.), Llyn Gwair, Pembroke.**

1847. Descriptive and Surgical Anatomy, Hon. Cert.;  
Materia Medica, Hon. Cert.  
1848. Descriptive and Surgical Anatomy, Hon. Cert.;  
Physiology and Anatomy, Hon. Cert.;  
Botany, Hon. Cert.;  
Comparative Anatomy, Hon. Cert.

**BOWN (J. Y.), America.**

1848. Descriptive and Surgical Anatomy, Hon. Cert.

**BOYCOTT (A. N.), Rugeley.**

- w 1887-8. 4th Year Student, qualified for Cheselden Medal.

**BRAKE (J.), Holt, Wilts.**

1851. Matriculation Scholarship, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
1st Year Student, Scholarship;  
Chemistry, Hon. Cert.  
1852. 2nd Year Student, Scholarship;  
Physiology, Prize;  
Materia Medica, Hon. Cert.  
Botany, Hon. Cert.;  
Medicine, Hon. Cert.  
1853. 3rd Year Student, Scholarship;  
Clinical Medicine, Treas. Prize;  
Midwifery, Prize;  
Forensic Medicine, Prize.

**BRISTOWE (J. S.),§ Camberwell.**

1847. Medicine, Hon. Cert.;  
Physiology and Anatomy, Hon. Cert.;  
Descriptive and Surgical Anatomy, Prize.

§ Consulting Physician to St. Thomas's Hospital. Late Lecturer on General Pathology, and Joint Lecturer on Medicine, St. Thomas's Hospital.

- 1848 Descriptive and Surgical Anatomy, Hon. Cert.;  
Physiology and Anatomy, Prize;  
Practical Chemistry, Prize;  
Botany, Prize;  
Midwifery, Hon. Cert.;  
Comparative Anatomy, Prize;  
Surgery, Prize;  
General Proficiency, Treasurer's Medal.

**BRITTON (T.), Doncaster.**

1861. 1st Year Student, Hon. Cert.

**BROCK (J.), Northwich.**

- w 1872. 1st Year Student, 2nd Coll. Prize.  
s 1872. Hon. Cert.

**BROCKATT (A. A.), Denmark Hill.**

- w 1884-5. 4th Year Student, qualified for the Mead Medal.

**BROWN (F. G.), London.**

1860. 1st Year Student, Hon. Cert.  
1861. 2nd Year Student, 3rd Coll. Prize.  
1862. 3rd Year Student, 3rd Coll. Prize.

**BROWN (G. D.), Croydon.**

1851. Physiology, Hon. Cert.;  
Botany, Prize;  
Surgery, Hon. Cert.;  
1852. Physiology, Hon. Cert.;  
Physical Society's Essay, Treasurer's Prize;  
Medicine, Hon. Cert.;  
Pathology, Prize.

**BROWN (T. J. E.), Dorchester.**

1848. Practical Midwifery, Hon. Cert.

**BUCKNILL (E. R.), Bedford.**

1855. 1st Year Student, Scholarship;  
Midwifery, Hon. Cert.;  
Chemistry, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Materia Medica, Hon. Cert.

**BULL (J.), Norwood, Surrey.**

1848. Midwifery, Hon. Cert.

**BURDEN (H.), Belfast.**

- w 1836-7. 1st Year Student, The William Tite Scholarship.  
s 1887. 1st Year Student, 2nd Coll. Prize.  
w 1887-8. 2nd Year Student, 2nd Coll. Prize.

**BUTLER (W.), Stoke Newington.**

1845. Materia Medica, Hon. Cert.

**CAIGER (F. F.), Gloucester-st., S.W.**

- w 1879-80. 1st Year Student, 3rd Coll. Prize.  
w 1880-81. 2nd Year Student, 3rd Coll. Prize.  
w 1882-83. 4th Year, the Mead Medal.

**CANN (R. T.), Plymouth.**

- s 1882. 2nd Year Student. 1st Coll. Prize.  
s 1883. 3rd Year Student. 2nd Coll. Prize.

**CARPENTER (A.),\* Rothwell.**

1848. Descriptive and Surgical Anatomy, Hon. Cert.;  
Chemistry Prize;  
Materia Medica, Hon. Cert.;  
Matriculation Scholarship, Prize.  
1849. Physiology Hon. Cert.;  
Midwifery, Hon. Cert.;  
Descriptive Anatomy, 1st Prize;  
Medicine, 2nd Prize.

1850. Physiology, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Botany, Prize;  
Medicine, Prize;  
Surgery, Prize; [Medal.

1851. (Accoucheur) Midwifery, Prize;  
Essay on Chorea, Mr. N. Smith's Prize.

1852. Surgical Reports, President's Prize;  
Medical Reports, Dr. Roots' Prize;  
Ophthalmic Reports, a Governor's Prize;  
Clinical Medicine, Senior Prize.

**CARPENTER (A. B.), Croydon.**

- w 1876-7. 1st Year Student, Hon. Cert.

**CARPENTER (G. A.), Streatham.**

- w 1880-81. 1st Year Student, 3rd Coll. Prize.  
s 1881. 1st Coll. Prize.  
w 1881-2. 2nd Year Student, 3rd Coll. Prize.  
Prosecutor's Prize.

**CARR (J. T.), Bombay.**

1844. Surgery, Prize.

**CASTLE (H.), Newport, I. of Wight.**

- w 1874-5. 1st Year Student, 2nd Coll. Prize.  
s 1875. 3rd College Prize.  
w 1876-7. Physical Society's 3rd Year's Prize.

**CAUDLE (A. W. W.), Henfield, Sussex.**

1858. Clinical Medicine, Prize.

**CHALDECOTT (C. W.), Dorking.**

1849. Descriptive Anatomy, Hon. Cert.;  
Chemistry, Hon. Cert.;  
Materia Medica, 2nd Prize;  
1st Year Student, Scholarship.

1850. Physiology, Hon. Cert.;  
Surgery, Prize.

1851. Physiology, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Medicine, Hon. Cert.;  
Physical Society's Essay, Treasurer's Prize;  
Surgery, Hon. Cert.;  
General Proficiency, Treasurer's Silver Medal.

**CHALDECOTT (T. A.), Newington**

1848. Descriptive Surgical Anatomy, Hon. Cert.;  
Chemistry, Hon. Cert.; [Cert.;  
Botany, Hon. Cert.;  
Materia Medica, Hon. Cert.;  
Comparative Anat., Hon. Cert.;  
Matriculation Scholarship, Prize;  
Practical Chemistry, Hon. Cert.

1849. Physiology, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Surgery, 2nd Prize;  
Medicine, Hon. Cert.

1850. Physiology, Hon. Cert.;  
Forensic Medicine, Prize;  
Pathology, Prize;  
Medicine, Hon. Cert.;  
Surgery, Hon. Cert.

**CHAPMAN (C. E.), Preston.**

1855. Midwifery, Hon. Cert.;  
Materia Medica, Hon. Cert.  
1857. Clinical Assistant, Prize;  
Physical Society's Essay, Prize.

**CHARPENTIER (A. E.).**

- 1882-3. 4th Year, The Mead Medal Exam.,  
Special Mention and Hon. Cert.

**CHERRY (A. H.), Clapham.**

1845. Clinical Medicine, Hon. Cert.

\* Late Examiner in State Medicine, University of Cambridge. Late Lecturer on State Medicine at St. Thomas's Hospital.

**CHIFFERFIELD (W. N.), Reading.**

1852. 1st Year Student, Scholarship;  
Descriptive Anatomy, Prize;  
1853. 2nd Year Student, Scholarship;  
Physiology, Prize;  
Descriptive Anatomy, Prize;  
Midwifery, Prize;  
Physical Society's Essay, Prize;  
Medicine, Prize;  
Surgery, Prize.  
1854. 3rd Year Student, Scholarship;  
Medicine, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Midwifery, Prize;  
Physical Society's Essay, Treasurer's Prize;  
Forensic Medicine, Prize;  
Chemistry, Hon. Cert.;  
Comparative Anatomy, Prize;  
Pathology, Prize;  
Surgery and Surgical Anatomy, Cheselden Medal;  
Clinical Medicine, Treasurer's Prize,  
Physiology, Prize; [Medal.  
General Proficiency, Treasurer's

**CLAPTON (E.),\* Stamford.**

1851. Matriculation Scholarship, Hon. Cert.;  
1st Year Student, 1st Scholarship;  
Descriptive Anatomy, Prize;  
Chemistry, Prize.  
1852. 2nd Year Student, Scholarship;  
Physiology, Prize;  
Materia Medica, Prize;  
Botany, Prize;  
Medicine, Hon. Cert.  
1853. 3rd Year Student, Scholarship;  
Physiology, Hon. Cert.; [Prize;  
Clinical Medicine, Treasurer's  
Midwifery, Hon. Cert.;  
Physical Society's Essay, Treasurer's Prize;  
Medicine, Hon. Cert.;  
Forensic Medicine, Hon. Cert.;  
Chemistry, Hon. Cert.;  
Surgery, Hon. Cert.  
1854. Ophthalmic Reports, Governor's Prize;  
Clinical Medicine, Mr. N. Smith's Prize.

**CLAPTON (W.), Stamford.**

1855. Midwifery, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Materia Medica, Prize.  
1856. Clinical Medicine, Prize.  
1858. Midwifery, Hon. Cert.

**CLARKE (A.), Dorking.**

1856. 1st Year Student, Treasurer's 2nd Prize.

**CLARK (J. H.), Jamaica.**

1867. 2nd Year Student, Physical Society's 2nd Year's Prize.

**CLARKSON (J. W.), Surbiton.**

- w 1872. 2nd Year Student, 3rd Coll. Prize.  
w 1873. 3rd Year Student, 2nd Coll. Prize;  
Surgery and Surgical Anatomy, Hon. Cert.

**CLEGHORN (G.), Bedford.**

1872. 3rd Year Student, Hon. Cert.

**CLUTTERBUCK (M. C.), Bath.**

- w 1886-7. 1st year Student, 2nd Entrance Science Scholarship.

**COGGINS (T.), Hayford, Woodstock.**

1847. Chemistry, Hon. Cert.  
1848. Descriptive and Surgical Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.  
1849. Midwifery, Hon. Cert.;  
Medicine, Hon. Cert.  
1850. Surgical Reports, Prize;  
(Accoucheur) Midwifery, Hon. Cert.

**COLBY (W. T.), Malton, York.**

1849. Descriptive Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.

**COLLIER (T. P.), Worship Square.**

1847. Practical Midwifery, Prize.

**COMPLIN (E. J.), Charterhouse Sq.**

1851. Clinical Medicine, Prize;  
Medical Cases, President's Prize;  
Surgery, Hon. Cert.  
1852. Midwifery, Hon. Cert.;  
Pathology, Hon. Cert.

**COOK (S. B.), Cape of Good Hope.**

- s 1883. 1st year Student, 2nd Coll. Prize.

**COOK (W.), Gainsboro'.**

1844. Chemistry, Hon. Cert.;  
Materia Medica, Hon. Cert.

**COOKE (C. W.), Regent's Park.**

- w 1883-4. 1st year Student, 1st Entrance Science Scholarship.

**COOKE (J.), Stamford.**

1855. Comparative Anatomy, Prize;  
Midwifery, Hon. Cert.;  
Physiology, Hon. Cert.

**COOPER (H. S.), Brightlingsea.**

- s 1887. 2nd Year Student, 2nd Coll. Prize.

**COPELAND (W. H. L.), South Kensington.**

- w 1887-8. 4th Year Student, qualified for the Mead Medal.

**CORY (R.),† Carlisle.**

1870. Physical Society's 3rd Year's Prize.

**COUSINS (J. W.), Portsea.**

1854. Descriptive Anatomy, Hon. Cert.;  
Chemistry, Hon. Cert.  
1855. Surgery, Prize;  
Midwifery, Prize;  
Midwifery, Hon. Cert.  
1856. Clinical Medicine, Prize;  
Surgery and Surgical Anatomy, Cheselden Medal.

**COWEN (P.), Kennington.**

1862. 1st Year Student, 2nd Coll. Prize.  
1863. 2nd Year Student, 2nd Coll. Prize.  
1864. 3rd Year Student, 2nd Coll. Prize.

**COWEN (T. P.), Upper Holloway.**

- w 1884-5. 1st Year Student, Half 1st and 2nd Coll. Prizes.  
s 1885. 1st Year Student, 2nd Coll. Prize  
w 1885-6. 2nd Year Student, 1st Coll. Prize.  
s 1886. 2nd Year Student, 1st College Prize.  
w 1886-7. 3rd Year Student, 2nd Coll. Prize.  
w 1887-8. 4th Year Student, qualified for the Mead Medal.

**COX (E.), Maiden Newton, Dorsetshire.**

1866. 1st Year Student, 3rd Coll. Prize.  
1868. 3rd Year Student, 2nd Coll. Prize.

\* Late Physician to, and Lecturer on Materia Medica at, St. Thomas's Hospital. Physician to the Magdalen Hospital.

† Assistant Obstetric Physician to, and Joint Lecturer on Forensic Medicine at, St. Thomas's Hospital.



**COXWELL (C. F.), Brighton.**

1880. 4th Year Student, the Mead Medal.

**CRICK (S. A.), Cosby-hill, Leicester-shire.**

s 1875. 1st Year Student, Hon. Cert.  
w 1875-6. Prosector's Prize.  
w 1876-7. 3rd Year Student, 3rd Coll. Prize.

**CROFT (J.),\* Clapton.**

1851. Descriptive Anatomy, Hon. Cert.  
1853. Midwifery, Hon. Cert.

**CROFTS (W. C.), Rowston, Lincoln.**

1855. Surgery, Hon. Cert.;  
Midwifery, Hon. Cert.

**CROSBY (T. B.), Gosberton, Lincoln.**

1851. Physiology, Prize;  
Descriptive Anatomy, Prize;  
Medicine, Prize;  
Surgery, Prize.  
1852. Physiology, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Medicine, Hon. Cert.;  
Forensic Medicine, Prize;  
Practical Chemistry, Prize;  
Surgery, Hon. Cert.;  
Surgery and Surgical Anatomy,  
Bronze Cheselden Medal;  
Comparative Anatomy, Prize.

**CROSSMAN (J.), Redruth.**

1871. Physical Society's 1st Year's Prize.  
1872. Physical Society's 2nd Year's Prize.  
1873. Physical Society's 3rd Year's Prize.

**CROUCH (H. C.), Haverstock Hill.**

w 1890-91. 1st Year Student, 2nd Entrance  
Science Scholarship.

**CROWDY (F. D.), Bath.**

w 1884-5. 4th Year Student, the Mead  
Medal.

**DAVIES (D.), Carmarthenshire.**

1843. Chemistry, 1st Prize;  
Midwifery, Hon. Cert.;  
Materia Medica, Prize.  
1844. Medicine, Hon. Cert.;  
Physiology and Anatomy, Hon. Cert.  
1845. Clinical Surgical Reports, Medal.

**DAVIES (D. S.), Bristol.**

1875-6. Physical Society's 1st Year's  
Prize.

**DAY (W. H.), Norwich.**

1844. Surgery, Prize;  
Physical Society's Essay, Hon.  
Cert.;  
Dresser's Clinical Surgery, Prize.

**DEAR (P. J.), Sutton.**

w 1890-91. Ranks as First Scholar in Natural  
Science.

**DECK (J. F.), Nelson, New Zealand.**

1860. 1st Year Student, 1st Coll. Prize.  
1861. 2nd Year Student, 1st Coll. Prize;  
Physical Society's Prize.  
1862. 3rd Year Student, 1st Coll. Prize;  
Physical Society's Prize;  
Cheselden Medal;  
Treasurer's Gold Medal.

\* Late Member of Council Royal College of Surgeons. Consulting Surgeon to, late Special Lecturer on Clinical Surgery, Lecturer on Practical Surgery, and Assistant Demonstrator of Anatomy at, St. Thomas's Hospital. Late Examiner in Surgery, University of Durham.

**DICKERSON (S. H.), Hartest, Suffolk.**

1853. Physiology, Hon. Cert.;  
Materia Medica, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Medicine, Hon. Cert.

**DIXON (E. L.), Preston, Lancashire.**

1852. 1st Year Student, Scholarship;  
Chemistry, Hon. Cert.  
1853. 2nd Year Student, Scholarship;  
Physiology, Hon. Cert.;  
Materia Medica, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Botany, Prize;  
Medicine, Hon. Cert.  
1854. 3rd Year Student, Scholarship;  
Descriptive Anatomy, Hon. Cert.;  
Practical Chemistry, Prize;  
Physiology, Hon. Cert.

**DIXON (W. E.), Dulwich.**

w 1890-91. 1st Year Student, 1st Entrance  
Science Scholarship.

s 1891. 1st Year Student, 2nd Coll. Prize.

**DOBSON (N. C.),† Holbeach, Lincoln-shire.**

1865. 1st Year Student, 1st Coll. Prize.  
1866. 2nd Year Student, 1st Coll. Prize.  
1867. 3rd Year Student, 2nd Coll. Prize;  
A Prize and Hon. Cert. for Pro-  
ficiency in Surgery and Surgical  
Anatomy at the Cheselden  
Medal Examination;  
Treasurer's Gold Medal.

**DRAKE (A. J.), Kingsclere, Hants.**

1870. 3rd Year Student, 1st Coll. Prize.

**DRAKE (C. H.), Kingsclere, Hants.**

1857. 1st Year Student, Hon. Cert.;  
1858. 2nd Year Student, Treasurer's  
1st Prize;  
Clinical Medicine, 2nd Prize.

1859. 3rd Year Student, Hon. Cert.;  
Surgery and Surgical Anatomy,  
Cheselden Medal; [Medal.  
General Proficiency, Treasurer's

**DRAKE (T.), Kingsclere, Hants.**

1858. 2nd Year Student, Treasurer's  
1st Prize;  
1859. 2nd Year Student, President's Prize.  
1860. 3rd Year, 1st College Prize;  
Surgery and Surgical Anatomy,  
Cheselden Medal; [Medal.  
General Proficiency, Treasurer's

**DREW (G. F. A.), Plymouth.**

1848. Descriptive and Surg. Anat. Prize;  
Chemistry, Hon. Cert.;  
Botany, Prize;  
Comparative Anatomy, Hon. Cert.;  
Practical Chemistry, Prize;  
Gen. Proficiency, Hon. Cert.  
1849. Physiology, 2nd Prize;  
Midwifery, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Medicine, Hon. Cert.  
1850. Physiology, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Medicine, Hon. Cert.;  
Surgery, Hon. Cert.

**DUKES (C.),‡ Dalston.**

1865. 1st Year Student, Hon. Cert.  
1867. 3rd Year Student, Hon. Cert.;  
Prosector's Prize and Hon. Cert.

† Surgeon to the Bristol General Hospital and Lecturer on Surgery at the Bristol Medical School.

‡ Physician to Rugby School, and Senior Physician to Rugby Hospital.

**DUKES (T. A.), Croydon.**

w 1888-9. 4th Year Student, Qualified for Mead Medal.

**DUNCAN (H.), London.**

w 1882-3. 1st Year Student, 1st Entrance Science Scholarship, 1st Coll. Prize.  
w 1883-4. 2nd Year Student, Prosector's Prize.

**DUNCAN (W.),\* Manchester.**

w 1876-7. 1st Year Student, The William Tite Scholarship.

s 1877. 1st College Prize.

w 1877-8. 2nd Year Student, The Musgrove Scholarship.

2nd Year Physical Society's Prize.

s 1878. 1st College Prize.

w 1878-9. 2nd Tenure Musgrove Scholarship. 1st College Prize;

3rd Year Physical Society's Prize; Grainger Testimonial Prize.

1880. 4th Year Student, The Cheselden Medal.

The Treasurer's Medal.

w 1881-2. The Solly Medal and Prize.

**DUNMAN (G.), Camberwell.**

1852. Chemistry, Hon. Cert.

1854. Midwifery, Hon. Cert.

**DYBALL (B.), Brixton.**

w 1891-92. 1st Year Student, 1st Coll. Prize.

**DYER (F. J.), Blackheath.**

1847. Chemistry, Prize;

Materia Medica, Hon. Cert.;

1849. Physiology, Hon. Cert.;

Midwifery, 2nd Prize;

Medicine, Hon. Cert.

**ECCLES (C. H.), Brigg.**

w 1844-5. 2nd Year Student, 1st Coll. Prize.

s 1845. 2nd Year Student, 1st Coll. Prize.

w 1845-6. 3rd Year Student, 1st Coll. Prize.

s 1846. 3rd Year Student, 1st Coll. Prize.

**EDDOWES (J. H.), Loughboro'.**

1843. Physiology and Anatomy, Hon. Cert.;

Chemistry, Hon. Cert.;

Comparative Anatomy, Prize.

1844. Physiology and Anatomy, Hon. Cert.;

Clinical Medical Reports, Silver Medal.

1845. Clinical Medicine, Prize.

**EDDOWES (W. D.), Loughboro'.**

1845. Descriptive and Surgical Anatomy, Prize.

**EDMONDS (S.), St. Helen's, Lancashire.**

1852. Chemistry, Hon. Cert.

1853. Midwifery, Hon. Cert.;

Medicine, Hon. Cert.;

Surgery, Hon. Cert.

1854. Surgery and Surgical Anatomy, Hon. Cert.;

Clinical Medicine, Treas. Prize;

Clinical Medicine, Pres. Prize.

1855. Surgical Reports, Pres. Prize; Clinical Medicine, Dr. Roots' Prize.

**EDWARDS (S.), Littlehampton.**

1855. Midwifery, Hon. Cert.

**EDWARDS (V.), Woodbridge, Suffolk.**

1843. Surgery, Prize.

\* Obstetric Physician to, and Lecturer on Obstetric Medicine and Practical Midwifery at, Middlesex Hospital. Obstetric Physician Royal Hospital for Women and Children. Examiner in Midwifery, Examining Board in England.

**ELBOROUGH (P. J.), Herne Bay.**

1845. Chemistry, Hon. Cert.

1847. Medicine, Hon. Cert.;

Midwifery, Prize.

1848. Medicine, Hon. Cert.;

Surgery, Hon. Cert.;

Surgical Reports, Pres. Prize.

**ELLIS (J.), Portsea, Hants.**

1857. Clinical Assistant (Medicine), Hon. Cert.

**ELWIN (C. J.), London.**

1855. Practical Midwifery, Prize.

**EVANS (C. W. DE LACEY), Bangor.**

w 1876-7. 3rd Year Student, The Solly Prize and Hon. Cert.

**FAIRBANK (J.), Islington.**

1865. 1st Year Student, Hon. Cert.

1866. 2nd Year Student, Prosec. Prize.

**FARRANT (S.), Collumpton, Devon.**

1859. 2nd Year Student, Hon. Cert.

1860. 3rd Year Student, Hon. Cert.

**FAULKNER (R.), Camberwell.**

1844. Botany, Prize;

Clinical Medical Reports, Hon. Cert.

**FAWSETT (F.), Surbiton.**

w 1883-4. 1st Year Student, 2nd Entrance Science Scholarship. The William Tite Scholarship.

s 1884. 1st Year Student, 1st Coll. Prize.

w 1884-5. 2nd Year Student, The Musgrove Scholarship.

w 1885-6. 3rd Year Student, 2nd tenure of Musgrove Scholarship, with 3rd College Prize.

w 1886-7. 4th Year Student. The Cheselden Medal. Treasurer's Gold Medal.

**FELL (W.), Kensington.**

w 1878-9. 2nd Year Student, Prosector's Prize.

**FENTON (H. A. H.), Westminster.**

w 1875-6. 1st Entrance Science Scholarship.

s 1876. 1st Year Student, 1st College Prize.

**FERNIE (A.), Yeldon, Beds.**

1853. Physiology, Hon. Cert.;

Surgery, Hon. Cert.

**FERNIE (W. T.), Yeldon, Beds.**

1852. Practical Midwifery, Prize;

Midwifery, Hon. Cert.

**FISHER (J. H.), Exeter.**

w 1887-8. 1st Year Student, The William Tite Scholarship.

s 1888. 1st Year Student, 1st Coll. Prize.

w 1888-9. 2nd Year Student, The Musgrove Scholarship.

w 1889-90. 3rd Year Student, 2nd tenure of Musgrove Scholarship, with 1st College Prize.

s 1890. 3rd Year Student, 1st College Prize.

w 1890-91. 4th Year Student, qualified for the Cheselden Medal. Treasurer's Gold Medal.

**FISHER (T.), St. Michael's.**

s 1872. 1st Year Student, Hon. Cert.

s 1873. 2nd Year Student, 2nd College Prize.

w 1874. 2nd Year Student, 3rd College Prize.

w 1875. 3rd Year Student, Surgery and Surgical Anatomy, Prize, and Cert. of Hon.

**FORD (G. W.), Cape of Good Hope.**

w. 1880-81. 3rd Year Student, Prosector's Prize.

**FOWLER (J. T.), Winterton, Lincoln.**  
1854. Chemistry, Hon. Cert.  
1855. Botany, Hon. Cert.

**FOWLER (J.), Winterton, Lincoln.**  
1859. 1st Year Student, Hon. Cert.  
1860. 2nd Year Student, 2nd College Prize.  
1861. 3rd Year Student, 2nd College Prize.

**FREEMAN (D.), Kennington.**  
1859. Clinical Medicine, Prize.

**FREEMAN (A. J.), Southsea, Hants.**  
1865. 3rd Year Student, Hon. Cert.

**FULTON (J. A.), Stockwell.**  
1852. Botany, Hon. Cert.  
1853. Practical Chemistry, Prize.

**FURNIVAL (F. H.), Nottingham.**  
w 1878-9. 1st Year Student;  
The Wm. Tite Scholarship.

**GARDNER (E. B.), London.**  
1858. Matriculation Examination—Classics and Mathematics, Prize.

**GARTON (W.), St. Helier's.**  
1870. 2nd Year Student, 2nd College Prize.  
Physical Society's 2nd Year's Prize.  
1871. Physical Society's 3rd Year's Prize.

**GENGE (G. G.), Croydon.**  
w 1890-91. 1st Year Student, 1st Coll. Prize.  
s 1891. 1st Year Student, 1st College Prize.  
w 1891-92. 2nd Year Student, The Peacock Scholarship.

**GEORGE (C. F.), Kirton-on-Lindsay.**  
1855. Midwifery, Hon. Cert.  
1856. 2nd Year Student, Dr. Roots' Prize.  
1857. 3rd Year Student, Hon. Cert.;  
Surgery and Surgical Anatomy,  
Cheselden Medal.

**GERVIS (F. H.), Tiverton.**  
1861. 1st Year Matriculation Scholarship.  
—College Prize, 2nd Coll. Prize.  
1862. 2nd Year Student, 1st College Prize.  
1863. 3rd Year Student, Hon. Cert. and  
Physical Society's Prize.

**GERVIS (F. H.), Haverstock Hill.**  
w 1891-92. 1st Year Student, 2nd Entrance  
Science Scholarship.

**GERVIS (H.),\* Tiverton.**  
1856. 1st Year Student, Treas. 1st Prize;  
Matriculation Examination, Physics, &c., Prize.  
1857. 2nd Year Student, Pres. Prize;  
Physical Society's Essay, Prize.  
1858. Clinical Assistant (Medicine), 2nd  
Prize;  
Physical Society's Essay, Prize;  
General Proficiency, Treasurer's  
Medal.

**GILES (F. W.), Henley-on-Thames.**  
w 1875-6. 3rd Year Student, Hon. Cert.

**GIMBLETT (J.), Taunton.**  
1860. 1st Year Student, Hon. Cert.

**GIMLETTE (G. H. D.), Southsea.**  
s 1874. 1st Year Student, Hon. Cert.  
w 1875-6. 3rd Year Student, Hon. Cert.  
w 1876-7. Physical Society's 3rd Year's  
Prize.

\* Consulting Obstetric Physician to St. Thomas's Hospital, and to the Royal Maternity Charity. Late Examiner in Obstetric Medicine at the University of Cambridge and the Royal College of Physicians. Late Lecturer on Midwifery and Diseases of Women and Children at St. Thomas's Hospital.

**GLOVER (J. P.), Lansdowne Road.**  
w 1881-2. 3rd Year Student, 3rd Coll. Prize.

**GODDARD (E.), London.**  
1860. Matriculation Examination, Classics, &c., Prize.

**GODDARD (L.), London.**  
1856. Matriculation Examination, Classics and Mathematics, Prize.

**GODFREY (A. E.), Northampton.**  
s 1883. 2nd Year Student, 2nd Coll. Prize.  
w 1883-4. 3rd Year Student, 2nd Coll. Prize.

**GOODDY (E. S.), Hampstead.**  
w 1882-3. 2nd Year Student, 3rd Coll. Prize.  
s 1883. 2nd Year Student, 1st Coll. Prize.

**GOWLAND (W.), London.**  
1845. Botany, Hon. Cert.

**GRABHAM (C.), Islington.**  
1857. Matriculation Examination, Modern Languages, Prize.

**GRABHAM (G. W.),† Islington.**  
1855. Matriculation Examination, Scholarship;  
Midwifery, Hon. Cert.;  
Materia Medica, Hon. Cert.

**GRABHAM (J.), Rochford, Essex.**  
1848. Descriptive and Surgical Anatomy,  
Hon. Cert.;  
Chemistry, Hon. Cert.;  
Botany, Hon. Cert.;  
Comparative Anatomy, Prize.  
1850. Physiology, Hon. Cert.  
1851. Physiology, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Forensic Medicine, Prize;  
Surgery, Prize;  
Midwifery, Hon. Cert.

**GRABHAM (M. C.), Islington.**  
1860. 2nd Year Student, Hon. Cert.  
1861. 3rd Year Student, Hon. Cert.

**GREAVES (C. A.), Derby.**  
1861. 1st Year Student, Treasurer's Prize;  
Matriculation Examination, Hon. Cert.  
1862. 2nd Year Student, 2nd College Prize;  
Physical Society's Prize.  
1863. 3rd Year Student, 1st College Prize;  
Physical Society's Prize;  
Cheselden Medal.

**GREEN (C. D.), New Cross.**  
w 1879-80. 1st Year Student, The Wm. Tite  
Scholarship.  
s 1880. 3rd College Prize.  
w 1880-81. 1st College Prize.  
s 1882. 1st Coll. Prize.  
w 1882-3. 4th Year Student, qualified for  
Treasurer's Gold Medal.

**GREEN (J. T.), Peckham, Surrey.**  
1865. 1st Year Student, Physical Society's  
Prize.

**GREEN (M. H.), Peckham.**  
s 1873. 1st Year Student, 2nd College Prize.

**GROSE (S.), Boston, Lincoln.**  
1858. 2nd Year Student, Hon. Cert.  
1859. Physical Society's Essay Prize.

† Late Government Inspector of Lunatic Asylums and Hospitals, New Zealand. Late Resident Medical Superintendent at Earlswood Asylum.

**GRIFFITHS (A. L.),** London.

1859. Midwifery, Hon. Cert.

**GULLIVER (G.),\*** Canterbury.

w 1876-7. Physical Society's 2nd Year's Prize.

**GURNEY (R. A. F.),** Rampton, Cambridge.

1851. Practical Midwifery, Prize.

**HAGUE (S.),†** Camberwell.

1863. 1st Year Student, 2nd Coll. Prize.

**HAIG-BROWN (C. W.),** Godalming.

s 1878. 1st Year Student, 2nd Coll. Prize;

w 1878-9. 2nd Year Student, 2nd Coll. Prize.

w 1880-81. The Cheselden Medal. [Prize.]

**HAINWORTH (E. M.),** Blackheath.

w 1888-9. 1st Year Student, 1st Entrance

Science Scholarship.

s 1889. 1st Year Student, 2nd Coll. Prize.

w 1890-91, 3rd Year Student, 1st Coll. Prize.

s 1891. 3rd Year Student, 1st Coll. Prize.

**HAMMERTON (E.),** Eiland, York.

1857. 1st Year Student, Hon. Cert.

**HAMMOND (J. H.),** Bridlington, York.

1850. Medical Cases, President's Prize.

**HARCOURT (J. C.)** South Woodford.

w 1891-92. 1st Year Student, The William

Tite Scholarship.

**HARDING (J. A.),** Bath.

1859. Clinical Medicine, 2nd Prize.

1860. Clinical Assistant (Medicine), 1st

Prize.

**HARPER (R.),** Brighton.

1844. Clinical Surgical Reports, Hon. Cert.

1845. Physical Society's Essay, Prize;

Dresser's Clinical Surgery, Prize.

**HARRIS (J. E.),** Lavender Hill.

w 1887-8. 1st Year Student, 1st Entrance

Science Scholarship.

**HASLAM (W. F.),†** Reading.

s 1876. 2nd Year Student, 1st Coll. Prize.

w 1877-8. The Cheselden Medal.

**HATCHETT (F. W.),** S. Wales.

s 1880. 1st Year Student, 1st Coll. Prize.

**HATTON (G. S.),** Newent, Gloucestershire.

[Prize.]

w 1876-7. 2nd Year Student, Prosecutor's

**HAWKINS (H. P.),§** Hawkhurst.

w 1882-3. 1st Year Student, The William

Tite Scholarship.

w 1883-4. 2nd Year Student. The Peacock

Scholarship.

w 1884-5. 3rd Year Student, 2nd tenure of

Peacock Scholarship and 1st

Coll. Prize.

w 1885-6. 4th Year Student, qualified for

Mead Medal.

**HAYDON (T. H.),** Richmond, Surrey.

w 1889-90. 4th Year Student, qualified for

Cheselden Medal.

\* Late Physician to London Fever Hospital. Late Assistant Physician to, and Lecturer on Comparative Anatomy at, St. Thomas's Hospital.

† Late Medical Registrar at St. Thomas's Hospital.

‡ Assistant Surgeon to the Birmingham General Hospital; late Demonstrator of Anatomy at St. Thomas's Hospital.

§ Assistant Physician to, and Demonstrator of Morbid Anatomy at, St. Thomas's Hospital; Radcliffe Travelling Fellow, Oxford, 1886.

**HEELIS (R.),** Carshalton.

s 1877. 1st Year Student, 2nd Coll. Prize

s 1878. 2nd Year Student, 2nd Coll. Prize.

**HEFFERNAN (H. H.),** Southsea.

w 1883-4. 1st Year Student, 2nd Coll. Prize.

w 1886-7. 4th Year Student, qualified for Cheselden Medal.

**HEIGHTON (T.),** Leicester.

w 1873. 3rd Year Student, Hon. Cert.

**HEWLETT (T. J.),** Harrow.

1850. Matriculation Scholarship, Prize.

**HEYGATE (W. N.),** Harslope, Bucks.

1863. 2nd Year Student, Hon. Cert.

1864. 3rd Year Student, Hon. Cert.

**HEYWOOD (C. C.),** Swinton, Manchester.

s 1888. 3rd Year Student, 2nd Coll. Prize.

**HICKS (J. W.),||** Highgate New Town, N.

1859. 1st Year Student, Treas.'s 1st Prize.

1860. 2nd Year Student, 1st Coll. Prize;

Physical Society's Prize.

1861. 3rd Year Student, 1st Coll. Prize;

Physical Society's Prize;

Cheselden Medal;

Treasurer's Gold Medal.

**HIGGINS (A. H.),** Bermondsey.

1857. Midwifery, Hon. Cert.

**HILDITCH (J.),** Sandbach, Cheshire.

1857. 1st Year Student, Hon. Cert.

1858. Physical Society's Essay, Prize.

1859. Essay on Neuralgia, Mr. N. Smith's

Prize.

**HOBHOUSE (E.),** Batcombe.

w 1885-6. 3rd Year Student, 2nd Coll. Prize.

w 1886-7. 4th Year Student, qualified for

the Mead Medal.

**HODGES (H. B.),**

1855. Midwifery, Hon. Cert.

**HODGES (R.),** London.

1843. Physiology and Anatomy, Hon.

Cert.:

Medicine, Hon. Cert.;

Clinical Medicine, Hon. Cert.;

Surgical Essay, Silver Medal.

**HO KAI,** Hong Kong, China.

w 1875-6. 1st Year Student, Hon. Cert.

s 1876. Hon. Cert.

w 1876-7. 2nd Year Student, Hon. Cert.

**HOLBERTON (H. N.),** Hampton.

w 1876-7. 2nd Entrance Science Scholarship,

and 2nd Coll. Prize.

w 1877-8. 2nd Year Student, 1st Coll.

Prize.

**HOOPER (J. H.),** Upton Warren.

1858. 1st Year Student, Hon. Cert.

1859. 2nd Year Student, Coll. Prize.

1860. 3rd Year Student, Hon. Cert.

**HOPTON (A. W.),** Stockwell.

1851. Descriptive Anatomy, Hon. Cert.

**HOUSE (F. M.),** Chilbolton, Hants.

w 1886-7. 4th Year Student, qualified for

the Mead Medal.

**HOWELL (T.),** London.

1850. Practical Midwifery, Prize.

|| Late Lecturer on Botany at St. Thomas's Hospital; late Curator of the Museum.



**HUBBARD (J. W.), Leicester.**

1847. Clinical Medical Reports, Prize;  
 Medicine, Prize;  
 Physiology and Anatomy, Hon.  
 Cert.  
 Physical Society's Essay, Treas-  
 urer's Prize.

**HULBERT (H. H.), Highworth.**

- w 1857-8. 4th Year Student, qualified for  
 Cheselden Medal.

**HULL (W. W.), Acton.**

- w 1878-9. 2nd Entrance Science Scholar-  
 ship.  
 w 1881-2. The Mead Medal.

**HUNT (J. A.), Derby.**

- w 1873. 1st Year Student, Hon. Cert.  
 w 1874. Prosector's Prize.

**HUNTER (W. F.), Margate.**

1859. 1st Year Student, Hon. Cert.;  
 Matriculation Examination in  
 Classics and Mathematics, Prize;  
 Matriculation Examination in  
 Modern Languages, Prize.  
 1860. 2nd Year Student, 3rd Coll. Prize.  
 1861. 3rd Year Student, Hon. Cert.

**HURMAN (H. B.), Bridgewater.**

1853. Midwifery, Hon. Cert.

**HUTTON (J. S.), Sevenoaks.**

- w 1881-2. Entrance Science Scholarship.  
 2nd Coll. Prize.  
 s 1882. 1st Coll. Prize.  
 s 1884. 3rd Year Student, Half 1st and 2nd  
 Coll. Prizes.  
 w 1884-5. 4th Year Student, qualified for  
 the Mead and Treasurer's Medals.

**ILES (D.), Fairford.**

1863. 2nd Year Student, Hon. Cert.  
 1864. 3rd Year Student, Hon. Cert.

**INGLIS (W. W.),\* Brixton Hill.**

1864. 1st Year Student, 2nd Coll. Prize.  
 1865. 2nd Year Student, 2nd Coll. Prize.  
 1866. 3rd Year Student, 3rd Coll. Prize  
 Cheselden Medal.

**IVES (R.).**

1855. Midwifery, Hon. Cert.

**JACKSON (T. C.), Rotherhithe.**

1844. Materia Medica, Hon. Cert.

**JACOB (E. H.), Winchester.**

- w 1875-6. Physical Society's 3rd Year's Prize.

**JACOBSON (T. E.), Sleaford, Lincoln.**

1852. Practical Midwifery, Prize.

**JAFFÉ (C. S.), Hyde Park.**

- w 1887-8. 1st Year Student, Half 2nd Coll.  
 Prize.  
 w 1890-91. 4th Year Student, qualified for  
 the Mead Medal.

**JAMES (C. H.), Oudh, India.**

- w 1887-8. Solly Medal and Prize.

**JARDINE (J. L.), Brixton.**

1848. Physiology and Anatomy, Hon. Cert.  
 1850. Medical Reports, Dr. Roots' Prize.

**JAY (M.), Wallaroo, South Australia.**

- w 1877-8. 1st Year Student, 3rd Coll. Prize.  
 w 1878-9. 2nd Year Student, 2nd Coll. Prize;  
 Prosector's Prize.

**JEFFERSON (T. J.), Hull.**

1861. 2nd Year Student, Hon. Cert.  
 1862. 3rd Year Student, Hon. Cert.

**JOHNSON (W. G.), Wandsworth.**

1853. Chemistry, Hon. Cert.  
 1854. Midwifery, Hon. Cert.  
 1855. Comparative Anatomy, Prize;  
 Midwifery, Hon. Cert.

**JOHNSTON (G. D.).**

- w 1882-3. 4th Year, Cheselden Medal.

**JONES (S.),†Cricklewood, Middlesex.**

1851. Matriculation Scholarship, Prize;  
 Descriptive Anatomy, Hon. Cert.;  
 Chemistry, Hon. Cert.;  
 1st Year Student, Scholarship.  
 1852. 2nd Year Student, Scholarship;  
 Physiology, Hon. Cert.;  
 Descriptive Anatomy, Prize;  
 Botany, Hon. Cert.  
 1853. Physiology, Hon. Cert.;  
 Descriptive Anatomy, Hon. Cert.;  
 3rd Year Student, Scholarship;  
 Materia Medica, Hon. Cert.

**JONES (Sydney H.), George Street,  
Hanover Square.**

- w 1881-2. 1st Year Student, Entrance  
 Science Scholarship. The Wm.  
 Tite Scholarship.

- w 1882-3. 2nd Year Student, Half Musgrove  
 Scholarship and 1st Coll. Prize  
 combined.

Prosector's Prize.

- w 1883-4. 3rd Year Student, 2nd tenure of  
 Half Musgrove Scholarship,  
 with 1st College Prize.

- s 1884. 3rd Year Student, Half 1st and 2nd  
 Coll. Prizes.

- w 1884-5. 4th Year Student, The Cheselden  
 Medal.  
 Treasurer's Gold Medal.

**JONES (A. O.), Islington.**

1862. 1st Year Student, Hon. Cert.

**JONES (A. W.), Godington, Oxon.**

- s 1888. 3rd Year Student, 1st Coll. Prize.  
 w 1888-9. 4th Year Student, qualified for  
 Mead Medal.

**JONES (J.), Ilfracombe.**

1863. Matriculation Examination —  
 Modern Languages and Modern  
 History, College Prize.

**JONES (W. Wansbrough),‡ Leek.**

- w 1877-8. 1st Year Student;  
 1st Entrance Science Scholarship;  
 £60.

The William Tite Scholarship.

- w 1877-8. 1st Year Physical Society's Prize;  
 s 1878. 1st Year Student, 1st Coll. Prize;

- w 1878-9. 2nd Year Student, The College  
 Scholarship;

- s 1879. 2nd Year Student, 2nd Coll. Prize;  
 w 1879-80. 3rd Year Student, 2nd tenure of  
 Coll. Scholarship, and 1st Coll. Prize.

- w 1880-81. The Mead Medal;  
 Treasurer's Gold Medal.

**JOSEPH (S. W. J.), St. Leonards.**

1873. Physical Society's 2nd Year Prize.

† Late Member of Council, Royal College  
 of Surgeons. Consulting Surgeon to St.  
 Thomas's Hospital; late Lecturer on  
 Surgery, Anatomy and Ophthalmic Surgery.

‡ Radcliffe Travelling Fellow, Oxford,  
 1880. Late Resident Medical Officer, Barnes  
 Convalescent Hospital, Manchester.

\* Late Medical Registrar at St. Thomas's  
 Hospital.



**KEELE (J. T.), South Lambeth.**

1853. *Materia Medica*, Hon. Cert.;  
Midwifery, Hon. Cert.

**KELLOCK (T. H.), Totnes.**

w 1889-90. 4th Year Student; The Cheselden Medal.

**KERAKOOSSE (J.), East Indies.**

1854. Midwifery, Hon. Cert.

**KEYWORTH (J. W.),\* Aston, Berks.**

1848. Chemistry, Hon. Cert.;  
*Materia Medica*, Prize;  
General Proficiency, Hon. Cert.

1849. Physiology, Hon. Cert.;  
Midwifery, 3rd Prize;  
Medicine, Hon. Cert.;  
Physical Society's Essay, Prize.

1850. Physiology, Hon. Cert.;  
(Accoucheur) Midwifery, Hon. Cert.;  
Ophthalmic Reports, a Governor's Prize;

Essay on Neuralgia, Mr. Newman Smith's Prize.

1851. Comparative Anatomy, Prize;

Clinical Medicine, Prize;

Surgical Reports, Prize;

Midwifery, Prize;

Medical Reports, Prize;

Pathology, Prize;

Physical Society's Essay, Prize.

**KIDD (H. C.), Upper Norwood.**

w 1881-2. 1st Year Student, 3rd Coll. Prize.

w 1884-5. 4th Year Student, qualified for the Mead Medal.

**KING (A.), Norwich.**

w 1886-7. 1st Year Student, 1st Coll. Prize.

s 1887. 1st Year Student, 1st Coll. Prize.

s 1888. 2nd Year Student, 1st Coll. Prize.

w 1848-9. 3rd Year Student, 3rd Coll. Prize.

s 1889. 3rd Year Student, 1st Coll. Prize.

w 1889-90. 4th Year Student; Treasurer's Gold Medal.

**KNAGGS (R. H. E.), Trinidad, W. Indies.**

w 1875-6. Prosector's Prize.

**LAKE (W. W.), Ilford, Essex.**

1873. Physical Society's 1st Year's Prize.

**LAKE (R.), Dover.**

w 1881-2. 2nd Year Student, Prosector's Prize.

w 1883-4. 4th Year Student, qualified for Cheselden Medal.

**LAMBERT (T. W.), Cottingham.**

w 1888-9. 4th Year Student, qualified for Cheselden Medal.

**LANGLEY (R. J.), Tilehurst, Reading.**

w 1886-7. 4th Year Student, qualified for Cheselden Medal.

**LANKESTER (A. C.), Leicester.**

w 1885-6. 1st Year Student, 1st Coll. Prize.

w 1886-7. 2nd Year Student, Half 1st and 2nd College Prizes.

w 1888-9. 4th Year Student, The Cheselden Medal.

**LANKESTER (H.), Poole, Dorset.**

1850. 1st Year Student, Scholarship;  
Descriptive Anatomy, 1st Prize;  
Chemistry, Prize.

1851. Physiology, Prize;  
*Materia Medica*, Prize;  
Descriptive Anatomy, Hon. Cert.;

Botany, Hon. Cert.;

Medicine, Prize;

Physical Society's Essay, Prize;

Surgery, Hon. Cert.

1852. 3rd Year Student, Scholarship

Physiology, Hon. Cert.;

Descriptive Anatomy, Hon. Cert.;

Medical Cases, President's Prize;

Medicine, Prize;

Surgery, Prize;

Surgery and Surgical Anatomy

Cheselden Medal;

General Proficiency, Treasurer's

Medal.

1853. Surgical Essay, President's Prize.

**LANKESTER (H. H.), Leicester.**

w. 1890-81. Entrance Science Scholarship.

1st Year Student, 2nd Coll.

Prize.

w 1881-2. 2nd Year Student, The College

Scholarship Two Years.

**LATTER (C.), Downham Market.**

w 1890-91. 4th Year Student, The Mead

Medal.

**LAVER (H.)**

1855. Midwifery, Hon. Cert.

**LAVER (A. H.), Rayleigh.**

1870. 1st Year Student, 3rd Coll. Prize.

1871. 2nd Year Student, 2nd Coll. Prize.

w 1872. 3rd Year Student, 2nd Coll. Prize,  
Cheselden Medal.

**LAW (R. R.), Heslington.**

w 1890-91. 4th Year Student, qualified for  
the Cheselden Medal.

**LAWSON (R.), St. Andrews, N.B.**

w 1880-81. 1st Entrance Science Scholarship.  
1st Year Student, The Wm. Tite

Scholarship.

s 1881. 2nd Coll. Prize.

w 1881-2. 2nd Year, 2nd Coll. Prize.

w 1882-3. 3rd Year, 2nd Coll. Prize.

w 1883-4. 4th Year Student, The Cheselden  
Medal;

Treasurer's Gold Medal.

**LAXTON (T. L.), Stamford.**

w 1876-7. 2nd Year Student, Prosector's Prize.

**LEDGER (M.), London.**

1845. Dresser's Clinical Surgery, Prize.

**LEES (J.),† Wolverhampton.**

1859. 1st Year Student, Hon. Cert.;

1861. 3rd Year Student, Hon. Cert.;

Physical Society's Prize.

**LEESON (T.), Snaith, York.**

1847. Medicine, Hon. Cert.;

Surgery, Prize;

Physiology and Anatomy, Hon.

Cert.;

Descriptive and Surgical Anatomy

Hon. Cert.;

Midwifery, Hon. Cert.

1848. Descriptive and Surgical Anatomy,

Hon. Cert.;

Physiology and Anatomy, Hon.

Cert.;

Medicine, Hon. Cert.;

Midwifery, Prize.

**LE GROS (J.), Jersey.**

1844. Medicine, Hon. Cert.;

Midwifery, 1st Prize.

1845. Clinical Medical Reports, Medal;

Medicine, Hon. Cert.;

Dresser's Clinical Surgery, Prize.

\* Late Lecturer on Physiology at Sydenham College, Birmingham.

† Late Demonstrator of Morbid Anatomy at St. Thomas's Hospital.

- LEREW (F. W.),** Maida Vale.  
s 1876. 1st Year Student, Hon. Cert.
- LITTELJOHN (S. G.),** Falmouth,  
Jamaica.  
1865. 1st Year Student, Hon. Cert.
- LOCOCK (H. S.),** Blackheath.  
1848. Descriptive and Surgical Anatomy,  
Hon. Cert.;  
Physiology and Anatomy, Hon.  
Cert.;  
Midwifery, Hon. Cert.  
1849. Physiology, Hon. Cert.
- LONGSTAFF (G. B.),** Wandsworth.  
w 1873-4. 1st Year Student, 2nd Coll. Prize.  
s 1874. 1st Coll. Prize;  
Physical Society's 1st Year's Prize;  
s 1875. 2nd Year Student, 2nd Coll. Prize.  
w 1875-6. 3rd Year Student, 1st Coll. Prize.  
w 1876-7. 4th Year Student, Mead Medal.
- LOVELL (C. P.),** Hyde Park.  
w 1886-7. 1st Year Student, 1st Entrance  
Science Scholarship.  
w 1887-8. 2nd Year Student, The Peacock  
Scholarship.  
w 1888-9. 3rd Year Student, Second Tenure  
of Peacock Scholarship.
- LUARD (H. B.),** Aveley, Essex.  
s 1886. 3rd Year Student, 2nd Coll. Prize.  
w 1886-7. 4th Year Student, qualified for  
the Mead Medal.
- LUSH (W. H.),** Devizes.  
w 1872. 2nd Year Student, Prosector's  
Prize.
- LUSH (J. S.),** West Lavington.  
s 1873. 1st Year Student, 3rd Coll. Prize.
- MACEVOY (H. J.),** Chantilly.  
w 1884-5. 3rd Year Student, Half 2nd and  
3rd College Prizes.  
s 1885. 3rd Year Student, Half 1st and 2nd  
Coll. Prizes.  
w 1885-6. 4th Year Student, Bronze Mead  
Medal.
- MACKENZIE (H. W. G.),\*** Edinburgh.  
w 1882-3. 3rd Year Student, 3rd Coll. Prize.  
s 1883. 3rd Year Student, 1st Coll. Prize.  
w 1883-4. 4th Year Student, The Mead  
Medal.
- MACMURDO (H. H.),** New Broad  
Street.  
1847. Chemistry, Hon. Cert.  
1849. Midwifery, Hon. Cert.
- MANBY (W. G.),** Barking, Essex.  
1851. Descriptive Anatomy, Hon. Cert.
- MARCH (H. C.),** Newbury.  
1858. 1st Year Student, Treasurer's 2nd  
Prize.  
1859. 2nd Year Student, Hon. Cert.  
1860. 3rd Year Student, Hon. Cert.
- MARTIN (C. J.),** Dalston.  
w 1884-5. 1st Year Student, 2nd Entrance  
Scholarship.
- MASON (M. T.),** Newington.  
1845. Practical Midwifery, Hon. Cert.
- MAYBURY (A. C.),** Frimley, Surrey.  
1865. 3rd Year Student, Hon. Cert.
- MAYBURY (W. A.),** Frimley, Surrey.  
1867. 1st Year Student, 3rd College Prize.

- MAYBURY (H. M.),** Frimley, Surrey.  
1869. 1st Year Student, 2nd Coll. Prize.  
1871. 3rd Year Student, 3rd Coll. Prize.
- MAYBURY (A. V.),** Frimley.  
1870. 1st Year Student, 2nd Coll. Prize.  
1871. 2nd Year Student, 1st Coll. Prize.  
w 1872. 3rd Year Student, 1st Coll. Prize;  
Treasurer's Gold Medal.
- MAYNARD (J. C. M.)**  
1855. Midwifery, Hon. Cert.
- MEADOWS (H.),** Leicester.  
1867. 1st Year Student, The William  
Tite Scholarship;  
Phys. Soc. 1st Year's Prize.  
1863. 2nd Year, Tite Scholarship;  
Phys. Soc. 2nd Year's Prize.
- MILLAR (W. H.),** Brixton Hill.  
w 1888-9. 3rd Year Student, 2nd C. II. Prize.  
s 1889. 3rd Year Student, 2nd Coll. Prize.
- MILLER (B.),** London.  
1845. Midwifery, Hon. Cert.;  
Practical Midwifery, Prize;  
Clinical Medicine, Prize.
- MILNE (C. W.),** Aberdeen.  
1865. 1st Year Student, Hon. Cert.
- MILTON (A. R. O.),** Brighton.  
w 1891-92. 4th Year Student, The Mead  
Medal.
- MISKIN (E.),** Lambeth.  
s 1890. 2nd Year Student, 1st Coll. Prize.
- MISKIN (L. J.),** Lambeth.  
w 1889-90. 1st Year Student, 2nd Coll. Prize.  
w 1890-91. 2nd Year Student, Half 1st and  
2nd Coll. Prizes.
- s 1891. 2nd Year Student, 1st Coll. Prize.
- MITCHELL (J.),** Leicester.  
1866. 1st Year Student, 2nd Coll. Prize;  
Phys. Society's 1st Year's Prize.  
1867. 2nd Year Student, 2nd Coll. Prize.  
1868. 3rd Year Student, 2nd Coll. Prize.
- MONEY (F. J.),** Offham, Kent.  
1849. Descriptive Anatomy, 2nd Prize;  
Chemistry, Prize;  
Materia Medica, 1st Prize;  
Matriculation Scholarship, Prize;  
1st Year Student Scholarship.
1850. Physiology, Prize;  
Comparative Anatomy, Prize;  
Descriptive Anatomy, Prize;  
Medicine, Prize;  
Surgery, Hon. Cert.
1851. Descriptive Anatomy, Hon. Cert.;  
Midwifery, Prize;  
Medicine, Prize;  
Physical Society's Essay, Prize;  
Surgery, Prize;  
Surgery and Surgical Anatomy,  
Cheselden Medal;  
General Proficiency, Treasurer's  
Gold Medal.
- MONTAGUE (A. J. H.),** Wandsworth  
Road.  
w 1884-5. 4th Year Student, qualified for  
the Mead Medal.
- MORETON (J. E.),** Marton, Cheshire.  
1850. 1st Year Student, Scholarship;  
Descriptive Anatomy, Hon. Cert.;  
Chemistry, Hon. Cert.
1851. Materia Medica, Hon. Cert.;  
Botany, Hon. Cert.;
1852. Physiology, Prize;  
Descriptive Anatomy, Prize;  
Physical Society's Essay, Prize;  
Medicine, Prize;  
Surgery, Prize;  
2nd Year Student, Scholarship.

\* Assistant Physician to the Royal Free Hospital and to the Hospital for Consumption, Brompton; Medical Registrar at, late Resident Assistant Physician to, St. Thomas's Hospital.

1853. 3rd Year Student, Scholarship;  
Physiology, Prize;  
Clinical Medicine, Pres. Prize;  
Clinical Medicine, Treas. Prize;  
Clinical Medicine, Mr. N. Smith's  
Prize;  
Descriptive Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Ophthalmic Surgery, Prize;  
Medicine, Prize;  
Forensic Medicine, Hon. Cert.;  
Surgery, Hon. Cert.;  
Surgery and Surgical Anatomy,  
Cheselden Medal;  
Gen. Proficiency, Treas. Medal.
1854. Clinical Med., Dr. Roots' Prize;  
Pathology, Hon. Cert.
- MORETON (T.), Marton, Cheshire.**  
1857. 1st Year Student, Treasurer's 2nd  
Prize;  
Matriculation Examination, Clas-  
sics and Mathematics, Prize.
1858. Clinical Medicine, Prize.  
1859. 3rd Year Student, Hon. Cert.;  
Clinical Medicine, Hon. Cert.
- MORGAN (S.), London.**  
1852. Descriptive Anatomy, Hon. Cert.  
1853. Midwifery, Hon. Cert.  
1854. Midwifery, Hon. Cert.;  
Forensic Medicine, 2nd Prize.
- MORRIS (C. K.), Spalding, Lincoln-  
shire.**  
w 1875. Prosecutor's Prize.
- MORTON (J.), Holbeach, Lincoln.**  
1861. 1st Year Student, Hon. Cert.  
1862. 2nd Year Student, Hon. Cert.  
1863. 3rd Year Student, Hon. Cert.
- MOXON (H. M.), Briggsham.**  
1871. Prosecutor's Prize.
- MUSSON (A. W.), Clitheroe.**  
w 1888-9. 4th Year Student, qualified for  
Mead Medal.
- MUSSON (W. E.), Birkholme, Lin-  
coln.**  
1850. Matriculation Scholarship, Prize;  
Descriptive Anatomy, Hon. Cert.  
1851. Physiology, Hon. Cert.;  
Comparative Anatomy, Hon. Cert.;  
Medicine, Hon. Cert.
- NEWBY (C. H.),\* London.**  
1870. Prosecutor's Prize.
- NEWSHOLME (A.), Bradford.**  
w 1875-6. 1st Year Student, 1st Coll. Prize.  
w 1876-7. 2nd Year Student, 1st College  
Scholarship.  
s 1877. Ditto 1st Coll. Prize.  
w 1877-8. 3rd Year Student, The "College  
Scholarship," 1st Coll. Prize.
- NEWTH (A. H.), Kennington,  
Surrey.**  
1865. 1st Year Student, Hon. Cert.
- NICHOL (F. E.), Rouppell Park.**  
w 1844-5. 4th Year Student, qualified for  
the Cheselden Medal.
- NICHOL (R.), Camberwell.**  
1844. Chemistry, 1st Prize;  
Materia Medica, Prize.  
1845. Physiology and Anatomy, Hon.  
Cert.;  
Botany, Prize;  
Comparative Anatomy, Prize.
- NICHOLSON (F. W.), Putney.**  
s 1877. 1st Year Student, 3rd Coll. Prize.  
w 1877-8. 2nd Year Student, Prosecutor's  
Prize.
- NICHOLSON (J. F.),† Brigg, Lincoln.**  
w 1873. 1st Year Student, 1st Coll. Prize.  
s 1873. 1st Year Student, 1st Coll. Prize.  
w 1874. 2nd Year Student, 1st Coll. Prize.  
s 1874. Ditto 1st Coll. Prize.  
w 1875. 3rd Year Student, 1st Coll. Prize;  
Cheselden Medal;  
Mead Medal;  
Treasurer's Gold Medal.
- NICHOLSON (T. G.), Norwich.**  
w 1889-90. 1st Year Student, 1st Entrance  
Science Scholarship.
- NIX (H. W.), Somersham.**  
w 1888-9. 4th Year Student, qualified for  
Cheselden Medal.
- O'CALLAGHAN (C.), Killarney.**  
1847. Chemistry, Hon. Cert.;  
Materia Medica, Prize.  
1848. Medical Reports, President's Prize;  
Physiology and Anat., Hon. Cert.  
Midwifery, Hon. Cert.;  
Practical Midwifery, Prize;  
Forensic Medicine, Prize;  
Physical Society's Essay, Prize.  
1849. Physical Society's Essay, Treas-  
urer's Prize;  
Resident Accoucheur's Report,  
Prize.
- ORANGE (W.),‡ Torquay.**  
1854. Midwifery, Hon. Cert.  
1856. Midwifery, Hon. Cert.
- ORD (G. R.), Brixton.**  
1858. Midwifery, Hon. Cert.
- ORD (W. M.),§ Brixton.**  
1853. Matriculation Exam. Scholarship;  
1st Year Student, Scholarship;  
Descriptive Anatomy, Prize;  
Chemistry, Prize.  
1854. 2nd Year Student, Scholarship;  
Medicine, Prize;  
Materia Medica, Prize;  
Descriptive Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Surgery, Hon. Cert.;  
Physiology, Prize.  
1855. 3rd Year Student, Scholarship;  
Surgery and Surgical Anatomy,  
Cheselden Medal;  
Forensic Medicine, Prize;  
Pathology, Prize;  
Practical Chemistry, Prize;  
Medicine, Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.;  
Physiology, Prize;  
General Proficiency, Treasurer's  
Medal.  
1856. Registrar, Prize.
- ORD (W. W.), Brook Street.**  
s 1884. 1st Year Student, 2nd Coll. Prize.  
w 1884-5. 2nd Year Student, Half 2nd Coll.  
Prize.  
w 1886-7. 4th Year Student, Mead Medal.
- + Physician to the Hull General In-  
firmity.  
† Late Resident Medical Superintendent  
at Broadmoor Asylum.  
§ Physician to, and Joint Lecturer on  
Medicine at, St. Thomas's Hospital. Late  
Lecturer on Comparative Anatomy, Phy-  
siology, and Practical Physiology.

\* Late Surgical Registrar at St. Thomas's  
Hospital.

**ORTON (K. J. P.), Leicester.**

w 1890-91. 1st Year Student, The Wm. Tite Scholarship.

**OSBORN (S.),\* Brixton.**

1870. Physical Society's 2nd Year's Prize.

**OUGHTON (T.), London.**

1858. Clinical Medical Assistant, 1st Prize.

**OZANNE (C. H.), Guernsey.**

1844. Descriptive and Surgical Anatomy, Prize.

**OZANNE (J.), Guernsey.**

1843. Physiology and Anatomy, Cheshelden Medal;

Comparative Anatomy, Hon. Cert.

1844. Medicine, Prize;

Midwifery, 2nd Prize;

Surgery, Hon. Cert.;

Physical Society's Essay, Prize;

Clinical Surgical Reports, Silver Medal.

**PAGE (W. H.), Cheltenham.**

s 1872. 1st Year Student, Hon. Cert.

w 1873. 3rd Coll. Prize.

**PALMER (M. H. C.), Newbury, Berks.**

1870. Physical Society's 2nd Year's Prize.

1872. Physical Society's 3rd Year's Prize.

**PARSONS (F. G.), Lee, Kent.**

w 1882-3. 2nd Year, Prosecutor's Prize.

w 1886-7. 6th Year, Grainger Testimonial Prize.

**PATERSON (W. H. J.), Shepherd's Bush.**

w 1890-91. 1st Year Student, 2nd Coll. Prize.

**PEARCE (G.), Salisbury.**

1860. 1st Year Student, 2nd Coll. Prize.

1-61. 2nd Year Student, 2nd Coll. Prize.

**PEEK (F. H.), Diss, Norfolk.**

s 1872. 1st Year Student, 1st Coll. Prize.

w 1873. The William Tite Scholarship.

w 1874. 2nd Year Wm. Tite Scholarship.

**PENBERTH (J.), Redruth.**

1854. 1st Year Student, Scholarship;

Descriptive Anatomy, Prize;

Chemistry, Hon. Cert.

1855. 2nd Year Student, Scholarship;

Midwifery, Hon. Cert.;

Botany, Prize;

Descriptive Anatomy, Hon. Cert.

**PERKINS (J. J.), Brixton.**

w 1888-9. 3rd Year Student 1st Coll. Prize.

w 1889-90. 4th Year Student, qualified for Mead Medal.

**PERN (A.), Winchester, Hampshire.**

1865. 1st Year Student, Hon. Cert.

**PERRY (E. L.), St. George's Square.**

w 1891-92. 2nd Year Student, 2nd Coll. Prize.

**PHILLIPS (G. G.), Newcastle Emlyn.**

1859. 2nd Year Student, Hon. Cert.

1860. 3rd Year Student, 3rd Coll. Prize.

**PICKFORD (J. K.), Brixton.**

w 1872. 1st Year Student, 3rd Coll. Prize.

s 1872. Hon. Cert.

**PIETERSEN (J.), Cape of Good Hope.**

w 1883-4. Solly Medal and Prize.

**PIKE (W. R.), Leicester.**

1868. Physical Society's 1st Year's Prize.

**PIKE (J. B.), Leicester.**

w 1872. 2nd Year Student, Hon. Cert.

w 1873. 3rd Year Student, Hon. Cert.

**PLANCK (C.), Edenbridge.**

w 1888-9. 1st Year Student, 2nd Coll. Prize.

w 1889-90. 2nd Year Student, The Peacock Scholarship.

s 1890. 2nd Year Student, 2nd Coll. Prize.

w 1890-91. 3rd Year Student, 2nd tenure of Peacock Scholarship: with 3rd Coll. Prize.

**PLOWMAN (R.), Bridgewater, Somst.**

1862. 1st Year Student, Hon. Cert.

1863. 2nd Year Student, Hon. Cert.

1865. 3rd Year Student, Hon. Cert.

**POLLARD (F.), Taunton, Somerset.**

1865. 1st Year Student, 2nd Coll. Prize.

1866. 2nd Year Student, 2nd Coll. Prize;

Physical Society's 2nd Year's Prize.

1868. 3rd Year Student, 1st Coll. Prize;

Physical Society's 3rd Year's Prize; Cheshelden Medal.

**POTTER (H. P.),† Denmark Hill.**

w 1872. 1st Year Student, Hon. Cert.

s 1872. 3rd College Prize.

w 1873. 2nd Year Student, 2nd Coll. Prize; Prosecutor's Prize.

w 1874. 3rd Year Student, 1st Coll. Prize;

Cheshelden Medal;

Hon. Cert. for Gen. Proficiency.

1875. Grainger Testimonial Prize.

**POYNDER (G. F.), Clapham.**

1872. Phys. Society's 1st Year's Prize.

1874. Phys. Society's 3rd Year's Prize.

**PURKISS (A.), Kennington.**

w 1875-6. 1st Year Student, Hon. Cert.

s 1876. Hon. Cert.

**PURVIS (J. P.), Blackheath.**

1861. 1st Year's Student, Hon. Cert.; Matriculation Examination, Hon. Cert.

1862. 2nd Year Student, Hon. Cert.

1863. 3rd Year Student, Hon. Cert.

**PURVIS (W. P.), Greenwich.**

w 1890-91. 4th Year Student, qualified for the Cheshelden Medal.

**RAINBOW (F.), Lower Norwood.**

1864. 1st Year Student, Hon. Cert.

1865. 2nd Year Student, 3rd Coll. Prize.

1866. 3rd Year Student, 2nd Coll. Prize.

**RAYNER (H.),‡ Hythe, Kent.**

1862. Matriculation Examination—Physics and Natural History, Hon. Cert.; 1st Year Student, 1st Coll. Prize.

1863. 2nd Year Student, 1st Coll. Prize.

1864. 3rd Year Student, Hon. Cert.;

Hon. Cert. for the Cheshelden Medal.

**REDPATH (W.), Norwood Road.**

w 1891-92. 4th Year Student, qualified for Cheshelden Medal.

**RELTON (B.), Ealing.**

1880. 2nd Entrance Science Scholarship.

**RICHARDSON (C. S.), Greenwich.**

1831. Surgery, Hon. Cert.

1852. Midwifery, Prize.

**RICHARDSON (L.), Greenwich.**

1848. General Pathology, Prize.

† Late Surgical Registrar at St. Thomas's Hospital.

‡ Lecturer on Psychology at St. Thomas's Hospital. Late Lecturer on Psychology at Middlesex Hospital, and Medical Superintendent Hanwell Asylum.

\* Assistant Surgeon to the Hospital for Women, Soho Square. Late Surgical Registrar at St. Thomas's Hospital.



**RICHARDSON (S. W. F.), Whitby.**  
w 1889-90. 1st Year Student, The William Tite Scholarship.

s 1890. 1st Year Student, 2nd Coll. Prize.  
w 1890-91. 2nd Year Student, The Musgrove Scholarship.

w 1891-92. 3rd Year Student, 2nd Tenure of Musgrove Scholarship.

**RIDGE (J. J.), Horselydown.**

1864. 1st Year Student, The William Tite Scholarship.

1865. 2nd Year of Tite's Scholarship;  
Physical Society's 2nd Year's Prize  
Prosecutor's Prize.

1866. The Grainger Testimonial Prize.

1868. 3rd Year Tite Scholarship;  
Hon. Cert. for Proficiency in  
Surgery and Surgical Anatomy;  
Treasurer's Gold Medal.

**ROBERTS (E. A.), Birmingham.**

w 1884-5. 1st Year Student, Half 1st and  
2nd College Prizes.

s 1887. 3rd Year Student, 2nd Coll. Prize.

**ROBINSON (H. B.),\* Lower Norwood.**

s 1881. 2nd Year Student, 1st Coll. Prize.

**ROE (A. D.), Eccles.**

w 1880-81. 3rd Year Student, 2nd Coll.  
Prize.

**ROGERS (R. S.), Greenwich.**

1843. Midwifery, First Prize;  
Clinical Medicine, Hon. Cert.

**ROSSITER (G. F.), Taunton.**

1871. 1st Year Student, 1st Coll. Prize.

w 1872. 2nd Year Student, 2nd Coll. Prize.

s 1872. 1st Coll. Prize.

w 1873. 3rd Year Student, 3rd Coll. Prize;  
Cheselden Medal;  
Treasurer's Gold Medal.

**ROUSE (R. E.), Woodbridge.**

s 1880. 2nd Year Student, 3rd College Prize.

**RUDALL (J. T.), Crediton, Devon.**

1853. Physiology, Hon. Cert.;  
Midwifery, Hon. Cert.;  
Medicine, Hon. Cert.;  
Surgery, Hon. Cert.

**RUSSELL (A. E.), Greenwich.**

w 1889-90. 1st Year Student, 2nd Entrance  
Science Scholarship; 1st Coll.  
Prize.

s 1890. 1st Year Student, 1st College Prize.

w 1890-91. 2nd Year Student, Half 1st and  
2nd College Prizes.

w 1891-92. 3rd Year Student, 1st Coll. Prize.

**SANDFORD (H. C.), Brixton.**

w 1872. 1st Year Student, 1st Coll. Prize.

s 1872. 2nd College Prize.

w 1873. 2nd Year Student, 1st Coll. Prize.

s 1873. 3rd College Prize.

w 1874. 3rd Year Student, 2nd Coll. Prize;  
Treasurer's Gold Medal.

**SANEYOSHI (Y.), Tokio, Japan.**

w 1891-2. 3rd Year Student, 1st Coll. Prize.

**SANKEY (G. G.), Ashford, Kent.**

1864. 3rd Year Student, 3rd Coll. Prize.

**SAUNDERS (G. M. C.), London.**

1843. Midwifery, Hon. Cert.

**SAUNDERS (H. W.), London.**

1867. 1st Year Student, 2nd Coll. Prize.

1868. Prosecutor's Prize.

1869. 3rd Year Student, 1st. Coll. Prize;  
Treasurer's Gold Medal;  
Physical Society's 3rd Year's Prize.

**SAUNDERS (W. S.), Camden Town.**

1844. Midwifery, Hon. Cert.

1845. Medicine, Prize;

Midwifery, Prize;

Clinical Medicine, Prize.

**SAVILL (T. D.), Brixton.**

w 1875-6. 2nd Entrance Science Scholarship;  
1st Year Student, The William  
Tite Scholarship.

s 1876. 3rd College Prize.

w 1876-7. 2nd Year Student, Hon. Cert.

s 1877. 2nd Year Student, 2nd Coll. Prize.

**SCOTT (R. J.), Omagh, Tyrone.**

1861. 1st Year Student, Hon. Cert.

**SCUTT (T.), Bere Regis.**

w 1882-3. 3rd Year Student, 1st Coll. Prize.

**SEDGWICK (J.), Boroughbridge.**

1854. Descriptive Anatomy, Hon. Cert.

1855. Surgery, Hon. Cert.;

Midwifery, Hon. Cert.

**SEDGWICK (L. W.), Boroughbridge.**

1848. Descriptive and Surgical Anatomy,  
Prize;

Physiology and Anatomy, Prize;

Medicine, Hon. Cert.;

Midwifery, Prize;

Surgery, Prize;

1849. Physiology, 1st Prize;

Midwifery, 1st Prize;

Surgery, Prize;

Medicine, 1st Prize;

General Proficiency, Treasurer's  
Medal.

**SERGEANT (E.), Preston.**

1870. 3rd Year Student, 3rd Coll. Prize;  
Cheselden Medal.

**SEWELL (E.), Little Oakley.**

1848. Physiology and Anatomy, Hon. Cert.

**SHARKEY (S. J.),† Galway.**

1874. Physical Society's 2nd Year's Prize.

**SHAW (J.), Clapham Road.**

w 1874-5. 1st Year Student, 1st Coll. Prize.

s 1875. 1st Coll. Prize.

w 1875-6. 2nd Year Student, 1st Coll. Prize

**SHEA (H. G.), London.**

1860. 1st Year Student, Hon. Cert.

1861. 2nd Year Student, Hon. Cert.

1862. 3rd Year Student, 2nd Coll. Prize.

**SHEA (J.), London.**

1855. Midwifery, Hon. Cert.

1859. Midwifery, Hon. Cert.

**SHEARER (D. F.), Bradford, Yorks.**

s 1888. 2nd Year Student, Half 2nd Coll.  
Prize.

w 1889-90. 4th Year Student, qualified for  
Cheselden Medal.

**SHEPPARD (C. E.),‡ Kensington.**

w 1873-4. 1st Year Student, 1st Coll. Prize.

s 1874. 1st Year Student, 2nd Coll. Prize.

w 1874-5. 2nd Year Student, 1st Coll. Prize.

s 1875. 1st Coll. Prize.

w 1875-6. 3rd Year Student, 2nd Coll. Prize;  
Physical Society's 2nd Year's Prize.

† Physician to St. Thomas's Hospital.  
Examiner in Pathology, University of  
Oxford. Joint Lecturer on Pathological  
Anatomy, late Demonstrator of Morbid  
Anatomy at St. Thomas's Hospital.

‡ Late Anaesthetist to the Dental Depart-  
ment, Resident Assistant-Physician and  
Medical Registrar, St. Thomas's Hospital.

\* Junior Demonstrator of Anatomy at  
St. Thomas's Hospital, Late Resident  
Assistant Surgeon to St. Thomas's Hospital.



w 1876-7. 4th Year Student, the Treasurer's Gold Medal.

w 1877-8. Solly Medal and Prize, £20. Paper published in Hosp. Reports, Vol. VIII.

**SHEPPARD (W. J.), Kensington.**

w. 1880-81. 3rd Year Student, 3rd Coll. Prize.

w 1881-2. The Treasurer's Gold Medal.

**SHERINGTON (C. S.),\* Caius Coll., Cambs.**

w 1882-3. 6th Year, Grainger Testimonial Prize.

**SHIRTLIFF (E. D.), Kingston-on-Thames.**

w 1882-3. 2nd Entrance Science Scholarship.

**SIDDALL (J. B.),† Morton, Derby.**

1862. 1st Year Student, Hon. Cert.

1863. 2nd Year Student, Hon. Cert.

1864. 3rd Year Student, Hon. Cert.;

Hon. Cert. for the Cheselden Medal.

**SIMMONS (H. B. M.), West Indies.**

1849. Descriptive Anatomy, Hon. Cert.

**SIMON (M. F.), Blackheath.**

1866. 1st Year Student, 1st Coll. Prize.

1869. 3rd Year Student, 3rd Coll. Prize;

Prosecutor's Prize;

Prize and Hon. Cert. for Surgery and Surgical Anatomy.

**SIMPSON (H.), Market Weighton.**

w 1889-90. 3rd Year Student, 3rd Coll. Prize.

**SIMS (G. S.), Derby.**

s 1881. 1st Year Student, 3rd Coll. Prize.

**SISSONS (W. H.), Hull.**

1858. Matriculation Examination—

Physics, &c., Prize.

1859. 2nd Year Student, Hon. Cert.;

Clinical Medicine, Prize;

Physical Society's Essay, Prize.

1860. 3rd Year Student, 2nd Coll. Prize.

Physical Society's Prize.

**SKINNER (W.), Stockton-on-Tees.**

1848. Botany, Hon. Cert.;

Materia Medica, Hon. Cert.

**SKIPPER (J.), Dalston, London.**

1852. Midwifery, Hon. Cert.

**SKIPTON (S. S.), East Indies.**

1851. Midwifery, Hon. Cert.

**SLATER (J. S.), Bath.**

1868. 1st Year Student, 1st Coll. Prize.

1869. Physical Society's 2nd Year's Prize.

1870. 3rd Year Student, 2nd Coll. Prize;

Treasurer's Gold Medal.

**SLAUGHTER (C. H.), Farningham.**

1855. Midwifery, Hon. Cert.

**SLAUGHTER (G. M.), Farningham.**

1854. Midwifery, Hon. Cert.

**SMITH (E.), Wandsworth Common.**

w 1888-9. 1st Year Student, 2nd Entrance Science Scholarship.

The William Tite Scholarship.

s 1889. 1st Year Student, 1st Coll. Prize.

w 1889-90. 2nd Year Student, 1st Coll. Prize.

w. 1890-91. 3rd Year Student, 2nd College Prize.

s 1891. 3rd Year Student, 2nd Coll. Prize.

w 1891-92. 4th Year Student, qualified for Cheselden Medal.

Treasurer's Gold Medal.

**SMITH (H. U.), Reading.**

w 1876-7. 4th Year Student, Cheselden Medal.

**SMITH (R. P.),† Belvedere.**

s 1876. 2nd Year Student, 2nd College Prize.

**SMYTH (H. J.), Brondesbury.**

w 1882-3. 1st Year Student, 3rd Coll. Prize.

s 1883. 1st Year Student, 1st Coll. Prize.

w 1883-4. 2nd Year Student, 1st Coll. Prize.

s 1884. 2nd Year Student, 2nd Coll. Prize.

w 1885-6. 4th Year Student, Treasurer's Gold Medal.

**SNAITH (F.), Boston, Lincolnshire.**

1864. 3rd Year Student, Hon. Cert.

**SOPLY (E.),§ Congleton.**

w 1883-4. 2nd Year Student, 2nd Coll. Prize.

w 1885-6. Solly Medal and Prize.

**SOPLY (R. V.), Congleton.**

w 1884-5. 2nd Year Student, Half 2nd Coll. Prize.

w 1886-7. 4th Year Student, qualified for Cheselden Medal.

**SPRAKELING (R. J.), Canterbury.**

1855. Midwifery, Hon. Cert.

1856. 2nd Year Student, Hon. Cert.;

Clinical Medicine, Prize.

**STABB (A. F.), Ilfracombe.**

w 1885-6. 1st Year Student, 1st Entrance Science Scholarship;

The William Tite Scholarship.

s 1886. 1st Year Student, 2nd College Prize.

w 1886-7. 2nd Year Student, The Musgrove Scholarship.

s 1887. 2nd Year Student, 1st Coll. Prize.

w 1887-8. 3rd. Year Student, 2nd Tenure of Musgrove Scholarship, with 1st Coll. Prize.

w 1888-9. 4th Year Student, qualified for Cheselden Medal.

Treasurer's Gold Medal.

**STABB (E. C.),|| Ilfracombe.**

w 1883-4. 2nd Year Student, Prosecutor's Prize.

s 1884. 2nd Year Student, 1st Coll. Prize.

w 1885-6. 4th Year Student, qualified for Cheselden Medal.

**STABB (W. W.), Torquay.**

w 1889-90. 4th Year Student. The Mead Medal.

**STADDON (J. H.), London.**

1858. Clinical Medicine, Prize.

1859. Clinical Medicine, Prize.

**STEPHENS (J. N.), Walton-on-Thames.**

w 1876-7. Physical Society's 1st Year's Prize.

\* Lecturer on Physiology at St. Thomas's Hospital. Fellow of Gonville and Caius College, Cambridge. Professor - Superintendent of the Brown Institution. Physiological Society Hon. Sec. Examiner for the Natural Science Tripos, Parts II. and I., and in Physiology for the M.B. Degree, Univ. Camb. Examiner in Physiology for the Conjoint Board in England.

† Late Physician to H.B.M. Legation, Japan.

‡ Resident Physician and Medical Superintendent, Bethlem Royal Hospital for Lunatics. Late Resident Assistant-Physician to St. Thomas's Hospital.

§ Late Resident Medical Officer, Royal Free Hospital. Late Surgical Registrar at St. Thomas's Hospital.

|| Resident Assistant Surgeon, late Surgical Registrar, St. Thomas's Hospital.

**STEPHENS (S. Sanders), Taunton.**

1863. Physical Society's 2nd Year's Prize.

**STEWART (A. H.), Regent's Park.**w 1891-92. 1st Year Student, 1st Entrance  
Science Scholarship;  
2nd Coll. Prize.**STODDART (F. W.), Bristol.**

w 1877-8. 1st Year Student, 1st Coll. Prize.

**STOKES (W. G. G.), Cambridge.**

w 1887-8. 3rd Year Student, 3rd Coll. Prize.

**STONE (W. H.),\* London.**1854. Matriculation Examination—  
Scholarship;

1st Year Student, Scholarship;

Descriptive Anatomy, Hon. Cert.;

1854. Botany, Prize;

Chemistry, Prize.

1855. 2nd Year Student, Scholarship;

Forensic Medicine, Prize;

Physical Society's Essay, Prize;

Practical Chemistry, Prize;

Medicine, Prize;

Descriptive Anatomy, Hon. Cert.;

Materia Medica, Prize;

Physiology, Prize; [Prize.

Clinical Medicine, Mr. N. Smith's

1856. Clinical Medical Prize; [Medal.

General Proficiency, Treasurer's

**SUMMERHAYES (H.), Crewkerne,  
Somersetshire.**1861. Matriculation Examination—  
Classics and Mathematics,

President's Prize; [Prize;

Modern Languages, &amp;c., College

Physics and Natural History,

College Prize;

The William Tite Scholarship.

1862. 2nd Year Tite's Scholarship.

1863. 3rd Year Tite's Scholarship;

• Treasurer's Gold Medal.

**SUMMERHAYES (W.), Crewkerne,  
Somersetshire.**1856. Matriculation Examination—Clas-  
sics and Mathematics, Hon. Cert.;

Matriculation Examination—

Modern Languages, Prize.

**SUTCLIFF (E.), Camberwell.**

1861. 1st Year, 3rd College Prize;

Matriculation Examination—Hon.  
Cert.

1863. 3rd Year Student, 3rd Coll. Prize.

**SUTCLIFFE (J.), Ashton-under-Lyne**

1869. Prosecutor's Prize.

**SUTCLIFFE (W. G.), Clapham.**

w 1888-9. 1st Year Student, 1st Coll. Prize.

s 1889. 1st Year Student, 2nd Coll. Prize.

w 1889-90. 2nd Year Student, 2nd Coll. Prize.

w 1891-92. 4th Year Student, The Chesel-  
den Medal.**SWALLOW (J. D.), Reading.**

1861. 2nd Year Student, Hon. Cert.

\* Late Physician to, and Lecturer on  
Physics and Natural Philosophy, and on  
Materia Medica at, St. Thomas's Hospital;  
Late Examiner in Medicine, Royal College  
of Physicians; Late Assistant-Physician to  
the Hospital for Consumption, Brompton.

† Director-General of the Medical Depart-  
ment Imperial Japanese Navy. Surgeon to  
the Tokio General Hospital.

**SWEETING (R. B.), Reading.**

1853. 1st Year Student, Scholarship;

Descriptive Anatomy, Hon. Cert.;

Chemistry, Hon. Cert.

1854. 2nd Year Student, Scholarship;

Midwifery, Prize.

1855. 3rd Year Student, Scholarship;

Midwifery, Hon. Cert. ; [Prize.

Clinical Medicine, Treasurer's

**SWEETING (T.), Reading.**

1855. Midwifery, Hon. Cert.

**TAKAKI (Kanehiro),† Kasumigaseki,  
Tokio, Japan.**

w 1875-6. 1st Year Student, 3rd Coll. Prize.

s 1876. 2nd College Prize.

w 1876-7. 2nd Year Student, 1st Coll. Prize.

s 1877. 2nd Year Student, 3rd Coll. Prize.

w 1877-8. 3rd Year Student, 2nd Coll. Prize.

w 1878-9. 4th Year Student;

The Cheselden Medal;

The Treasurer's Gold Medal.

**TALBOT (G. T.), Kidderminster.**

1848. Medical Reports, Dr. Roots' Prize.

**TAYLOR (C. M.), Wrawby, Brigg.**

1871. 1st Year Student, 2nd Coll. Prize.

w 1872. 2nd Year Student, 1st Coll. Prize.

w 1873. 3rd Year Student, 1st Coll. Prize;

Surgery and Surgical Anatomy,  
Hon. Cert.**TAYLOR (S.),† Burton-on-Trent.**

w 1872. 3rd Year Student, Hon. Cert.

**TAYLOR (S. J.), Grantham.**

s 1875. 1st Year Student, Hon. Cert.

w 1875-6. 2nd Year Student, The Musgrove  
Scholarship.

w 1876-7. 3rd Year Student, 2nd Year

Musgrove Scholarship, and 1st

College Prize.

w 1877-8. The Mead Medal;

The Treasurer's Gold Medal.

**TEANBY (F. W.), Turnham Green.**

1851. Practical Midwifery, Prize.

1852. Clinical Medicine, Junior Prize;

Midwifery, Hon. Cert.

**THOMAS (L. M.), Camberwell.**

1866. 1st Year Student, 3rd Coll. Prize.

1867. 2nd Year Student, 3rd Coll. Prize.

1869. 3rd Year Student, 2nd Coll. Prize;

Cheselden Medal.

**THOMAS (P. C.), Chelsea.**w 1887-8. 4th Year Student, qualified for  
the Mead Medal.**THOMAS (W. L.), Neath, Glamorgan.**

1845. Chemistry, Prize;

Materia Medica, Prize.

1847. Medicine, Hon. Cert.;

Physiology and Anatomy, Prize ;

Physical Society's Essay, Prize.

**THOMPSON (F. H.), Tenbury.**

1870. Prosecutor's Prize.

**THUDICUM (G. D.), Kensington.**

w 1878-9. Physical Society's 2nd Year's Prize.

**TIMOTHY (P. V.), London.**

1851. Practical Midwifery, Prize;

Midwifery, Hon. Cert.

† Assistant Physician West London  
Hospital. Late Demonstrator of Anatomy,  
St. Thomas's Hospital. Late Physician  
North London Hospital for Consumption.

**TINLEY (W. E. F.),** Whitby.  
w 1891-92. 2nd Year Student, 1st Coll. Prize.

**TODD (A. J. M.),** Gravesend.  
w 1863. 1st Year Student, 2nd Coll. Prize.  
w 1864. Prosector's Prize.

**TOLLER (S. G.),** Notting Hill.  
w 1885-6. 1st Year Student, 2nd Entrance  
Science Scholarship.  
s 1886. 1st Year Student, 1st College Prize.  
w 1886-7. 2nd Year Student, Half 1st and  
2nd College Prizes.  
w 1887-8. 3rd Year Student, 2nd Coll. Prize.  
w 1888-9. 4th Year Student, The Mead  
Medal.

**TOMSON (K.),** Luton, Beds.  
1842. Materia Medica, Prize.  
1843. Medicine, Prize;  
Clinical Medicine, Hon. Cert.

**TOMSON (W. B.),** Luton, Beds.  
w 1879-80. 1st Year Student, 2nd Coll. Prize.  
s 1880. 1st Year Student, 2nd Coll. Prize.  
w 1880-81. 2nd Year Student, The Musgrove  
Scholarship, Prosector's Prize.  
w 1881-2. 3rd Year Student, 2nd Coll. Prize;  
2nd Tenure of Musgrove  
Scholarship.

s 1882. 2nd Coll. Prize.  
w 1882-3. Treasurer's Gold Medal.

**TONKING (J. H.),** Camborne.  
w 1884-5. 3rd Year Student, Half 2nd and  
3rd College Prizes.  
w 1885-6. 4th Year Student, The Cheselden  
Medal.

**TOTSUKA (K.),\*** Tokio, Japan.  
s 1882. 1st Year Student, 2nd Coll. Prize.  
w 1882-3. 2nd Year Student, Half Musgrove  
Scholarship and 1st Coll. Prize  
combined.  
w 1883-4. 3rd Year Student, 2nd tenure of  
Half Musgrove Scholarship,  
with 3rd College Prize.

**TREND (H. G.),** Bridgewater.  
1853. Practical Midwifery, Prize;  
Midwifery, Hon. Cert.  
1854. Midwifery, Hon. Cert.;  
Clinical Medicine, Treasurer's Prize.

**TREVES (W. K.),** Dorchester.  
1863. Matriculation Examination—  
Physics and Natural History,  
Hon. Cert.; and  
Modern Languages and Modern His-  
tory, College Prize and Hon. Cert.;  
1st Year Student, Hon. Cert.  
1865. 3rd Year Student, 2nd Coll. Prize;  
Prosector's Prize.

**TURNER (H. G.),†** Camberwell Grove.  
w 1885-6. 2nd Year Student, 2nd Coll. Prize.  
s 1886. 2nd Year Student, 2nd College Prize.  
w 1886-7. 3rd Year Student, 3rd Coll. Prize.  
s 1887. 3rd Year Student, 1st Coll. Prize.  
w 1887-8. The Mead Medal.

**TYRRELL (W.),** Richmond.  
1851. Descriptive Anatomy, Hon. Cert.  
1852. Medicine, Hon. Cert.;  
Surgery, Hon. Cert.  
1853. Forensic Medicine, Hon. Cert.;  
Ophthalmic Essay, Mr. Dixon's Prize  
1854. Surgical Reports, President's Prize

**UMNEY (W. F.),** Sydenham.  
w 1887-8. 2nd Year Student, 1st Coll. Prize.

**VARDY (J. L.),** London.  
1854. Midwifery, Hon. Cert.  
1855. Practical Midwifery, Prize.

**VERDON (H. W.),** Eccles.  
1872. 2nd Year Student, Hon. Cert.

**WAGSTAFFE (W. W.),‡** Kennington.  
1862. Matriculation Examination—Classics and Mathematics, President's  
Prize.  
Physics and Natural History  
College Prize;  
Modern Languages, &c., College  
Prize;  
1st Year Student, Treasurer's  
Prize;  
1863. 2nd Year Student, 1st Coll. Prize.  
1864. 3rd Year Student, 1st Coll. Prize;  
Physical Society's 3rd Year's Prize  
Cheselden Medal;  
Treasurer's Gold Medal.

**WALKER (R.),** Kendal.  
1854. Descriptive Anatomy, Hon. Cert.;  
Midwifery, Hon. Cert.  
1855. Midwifery, Hon. Cert.

**WALLACE (C. S.),** Haslemere.  
w 1887-8. 1st Year Student, Half 2nd Coll.  
Prize.  
s 1888. 1st Year Student, 2nd Coll. Prize.  
w 1888-9. 2nd Year Student, 1st Coll. Prize.  
w 1889-90. 3rd Year Student, 2nd Coll. Prize.

**WALLER (A.),** Islington.  
1864. 1st Year Student, 1st Coll. Prize.  
1865. 2nd Year Student, 1st Coll. Prize.  
1866. 3rd Year Student, 1st Coll. Prize;  
Physical Society's 3rd Year's Prize  
Treasurer's Gold Medal.

**WALLER (C. B.),** London.  
1860. 2nd Year Student, Hon. Cert. \*

**WARD (F. H.),§** Scarborough.  
1863. 1st Year Student, Treas. Prize.  
1864. 2nd Year Student, 1st Coll. Prize;  
Physical Soc. 2nd Year's Prize.  
1865. 3rd Year Student, 1st Coll. Prize;  
Physical Soc. 3rd Year's Prize;  
Cheselden Medal;  
Treasurer's Gold Medal.

**WATSON (F.),** Nottingham.  
1859. 1st Year Student, Hon. Cert.;  
Matriculation Examination—  
Physics, &c., Prize.

**WAY (F. W.),** Fratton, Portsmouth.  
1853. Descriptive Anatomy, Hon. Cert.;  
Chemistry, Hon. Cert.;  
1854. Midwifery, Hon. Cert.;  
Surgery, Hon. Cert.

**WAY (J. P.),** Portsmouth.  
1861. 1st Year, Hon. Cert.

**WEBBER (W. W.),** Crewkerne.  
w 1876-7. 1st Year Student, 3rd Coll. Prize.

**WEBSTER (E.),** Lee.  
w 1883-4. 1st Year Student, 1st Coll. Prize.  
s 1885. 2nd Year Student, Half 2nd Coll.  
Prize.

‡ Late Assistant Surgeon to, and Joint Lec-  
turer on Anatomy at, St. Thomas's Hospital.  
Late Member of the Board of Examiners,  
Royal College of Surgeons.

§ Assistant Medical Officer, County Asy-  
lum, Tooting, Surrey.

\* Deputy Inspector General of Hospitals,  
Imperial Japanese Navy.

† Resident Assistant Physician to St.  
Thomas's Hospital.

**WEBSTER (H.), Dulwich.**

1851. Matriculation Sch., Hon. Cert.;  
Descriptive Anatomy, Hon. Cert.  
1852. Botany, Hon. Cert.  
1853. Midwifery, Hon. Cert.

**WEEKES (F. H.), Southampton.**

- w 1873-4. 1st Year Student, 3rd Coll. Prize.  
s 1874. 3rd Coll. Prize.  
w 1874-5. 2nd Year Student, 2nd Coll. Prize.  
s 1875. 3rd Coll. Prize.  
w 1875-6. 3rd Year Student, 3rd Coll. Prize.

**WELLS (A. E.), Brixton.**

- w 1877-8. 1st Year Student, 2nd Entrance  
Science Scholarship.

**WEST (J. F.) \***

1853. Midwifery, Hon. Cert.  
1854. Forensic Medicine, Hon. Cert.;  
Pathology, Hon. Cert.  
1855. Ophthalmic Reports, Prize.

**WHEATON (F. D. W.), Honiton.**

1845. Practical Midwifery, Hon. Cert.

**WHEATON (S. W.),† Battersea Park.**

- s 1885. 3rd Year Student, Half 1st and 2nd  
College Prizes.  
w 1885-6. 4th Year Student, The Mead  
Medal.

**WHITEHEAD (E. T.), Battersea.**

- w 1886-7. 1st Year Student, 2nd Coll. Prize.  
s 1888. 2nd Year Student, Half 2nd Coll.  
Prize.

**WHITEHEAD (J.), Preston.**

1861. 1st Year, Hon. Cert.  
1862. 2nd Year Student, 3rd Coll. Prize.  
1863. 3rd Year Student, 2nd Coll. Prize.

**WILES (J.), Hitchin, Herts.**

1850. Physiology, Hon. Cert.  
1851. (Accoucheur) Midwifery, Prize.

**WILLIAMS (H.), Longley, near Gloucester.**

1862. 1st Year Student, 2nd Coll. Prize.  
1869. 2nd Year Student, 3rd Coll. Prize.

**WILLIAMS (J.), Westerleigh, Bristol.**

1855. 1st Year Student, Scholarship;  
Midwifery, Prize;  
Botany, Prize;  
Chemistry, Hon. Cert.;  
Descriptive Anatomy, Prize;  
Materia Medica, Hon. Cert.  
1856. 2nd Year Student, Treas.'s 1st Prize.  
1857. 3rd Year Student, Hon. Cert.  
Gen. Proficiency, Treasurer's Medal.

**WILLIAMS (J.), Doncaster.**

1858. 1st Year Student, Hon. Cert.  
1859. 2nd Year Student, Hon. Cert.;  
Clinical Medicine, Prize.  
1860. 3rd Year Student, Hon. Cert.

**WILLIAMS (P. H.), Monmouth.**

- s 1872. 1st Year Student, Hon. Cert.

\* Late Surgeon to Queen's Hospital, and  
Professor of Clinical Surgery at Queen's  
College Birmingham.

† Physician to the Royal Hospital for Child-  
ren and Women, to the Surrey Dispensary,  
and to the St. John's Home for Women;  
late Demonstrator of Physics, St. Thomas's  
Hospital.

**WILLIAMS (P. M. G.), Newcastle Emlyn.**

1864. Practical Midwifery, Prize.

**WILLIAMS (R. M.), Beaumaris.**

- w 1879-80. 1st Entrance Science Scholar-  
ship.

**WILLIAMS (W. R.),† Nottingham.**

1856. Matriculation Examination in  
Classics, Mathematics, Hon. Cert.

**WILLIAMSON (R. J.), Ripon.**

- w 1876-7. 1st Entrance Sc. Scholarship.

**WINSTON (W. B.), Oxford Gardens.**

- w 1887-8. 1st Year Student, 2nd Entrance  
Science Scholarship.

- w 1888-9. 2nd Year Student, 2nd Coll. Prize.

- s 1889. 2nd Year Student, 1st Coll. Prize.

- w 1891-92. Solly Medal and Prize.

**WITHERBY (W. H.), Croydon.**

1858. Matriculation Examination in  
Modern Languages, Prize.

**WOAKES (E.), Luton, Beds.**

1856. 1st Year Student, Hon. Cert.

1857. 2nd Year Student, 2nd Prize;

- Clinical Medical Prize.

1858. Essay on Neuralgia, Mr. N. Smith's  
Prize;

- Surgery and Surgical Anatomy,  
Cheselden Medal.

**WOOD (G. J.), London.**

1863. Descriptive Anatomy, Hon. Cert.

**WOOD (R. H.), Loughborough, Leicester.**

1854. Descriptive Anatomy, Hon. Cert.

1855. Surgery, Hon. Cert.;

- Midwifery, Prize;

- Medicine, Hon. Cert.;

- Descriptive Anatomy, Prize;

- Physiology, Hon. Cert.

1856. Physical Society's Essay, Prize.

**WOODHOUSE (T. J.), London.**

1855. Chemistry, Hon. Cert.;

- Materia Medica, Hon. Cert.

**WOODMAN (W. E.), Camberwell.**

- s 1875. 1st Year Student, 2nd Coll. Prize.

**WOTTON (H. G.)**

1855. Midwifery, Hon. Cert.

1856. Midwifery, Hon. Cert.

**WRENCH (E. M.), Cornhill.**

1851. Descriptive Anatomy, Hon. Cert.;

- Physical Society's Essay, Treas-  
urer's 1st Year's Prize;

1852. Physiology, Hon. Cert.

**WRIGHT (E. H.), Jersey.**

- s 1885. 2nd Year Student, Half 2nd Coll.  
Prize.

**WYMAN (C.), Putney.**

- w 1889-90. Solly Medal and Prize.

**WYMAN (W. S.), Kettering, Northampton.**

1852. Matriculation Examination  
Scholarship.

† Late one of H. M. Commissioners in  
Lunacy; late Resident Physician to Bethlem  
Royal Hospital; late Lecturer on Mental  
Diseases at St. Thomas's Hospital.

All old Students of St. Thomas's Hospital are requested to send their *present*  
addresses to The Medical Secretary, *St. Thomas's Hospital, Albert*  
*Embankment, Westminster Bridge, S.E.*



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